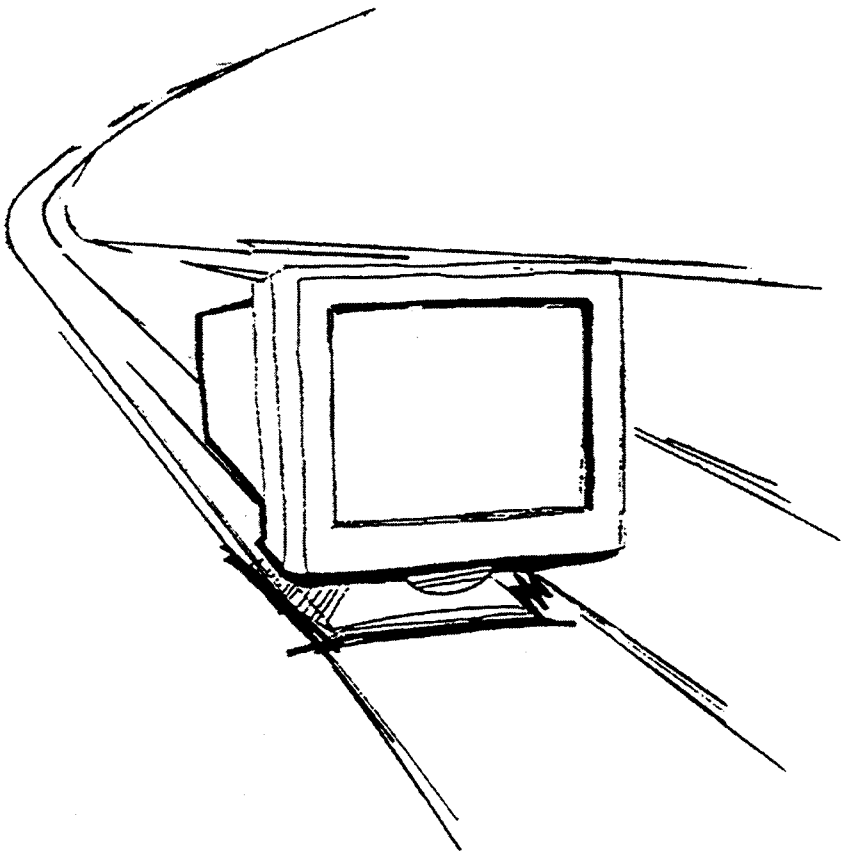
# 1765S/1785S

# TROUBLESHOOTING GUIDE



CTX

The Monitor Specialists

EDITION 1
Mar. 1996

Copyright ©1996 by Chuntex Electronic Co., Ltd.

The CTX TROUBLESHOOTING GUIDE is published by Chuntex Electronic Co., Ltd.

All rights reserved. No part of this manual may be used, copied, reproduced, or transmitted in any form or by any means for any purpose without the express written permission of the publisher.

The publisher has been trying its best to make this publication perfect, and in this manner takes no responsibility for the use of any of the materials or methods described in this manual, or for the products thereof. Neither will the publisher be responsible for any damages caused by misuse or misquotation.

Information in this manual is subject to change by the publisher without any notice in advance.

CTX is a registered trademark of Chuntex Electronic Co., Ltd.

## CONTENTS


**1.0 IMPORTANT NOTICE & INTRODUCTION ..... 1**

**2.0 GENERAL MAINTENANCE PROCEDURE ..... 2**

**3.0 FUNCTION BLOCK DIAGRAM ..... 3**

**4.0 TIMING MODE ..... 4**

**5.0 ADJUSTMENT ..... 6**

5.1 1785D/1765D ADJUSTMENT ..... 6

**6.0 TROUBLESHOOTING ..... 8**

6.1 MAIN TROUBLESHOOTING ROUTINE ..... 8

6.2 POWER SUPPLY CIRCUIT TROUBLESHOOTING ROUTINE ..... 9

6.3 MICON CIRCUIT TROUBLESHOOTING ROUTINE ..... 11

6.4 VIDEO CIRCUIT TROUBLESHOOTING ROUTINE ..... 16

6.5 DEFLECTION CIRCUIT TROUBLESHOOTING ROUTINE ..... 19

6.5.1 Horizontal Deflection Circuit ..... 19

6.5.2 Vertical Deflection Circuit ..... 23

**7.0 IC CONFIGURATION ..... 37**

**8.0 LAYOUT FOR MAIN COMPONENTS AND ADJUSTED ..... 40**

**9.0 CIRCUIT DIAGRAM ..... 40**

**10.0 RECOMMANDED SPARE PARTS LIST ..... 41**

**11.0 CRT CONTRAST LIST ..... 43**

# 1.0 IMPORTANT NOTICE & INTRODUCTION

## IMPORTANT NOTICE

Please read before attempting service

1. While the monitor is in operation, do not attempt to connect or disconnect any wires.
2. Make sure the power cord is disconnected before replacing any parts in the monitor.
3. When the power is on, do not attempt to short any portion of the circuit. This shorting may cause damage to the transistors in the monitor.
4. When servicing the H.V. area, be certain that the C.R.T anode is safely discharged before removing the anode cap.
5. Caution must exercised when servicing this monitor.

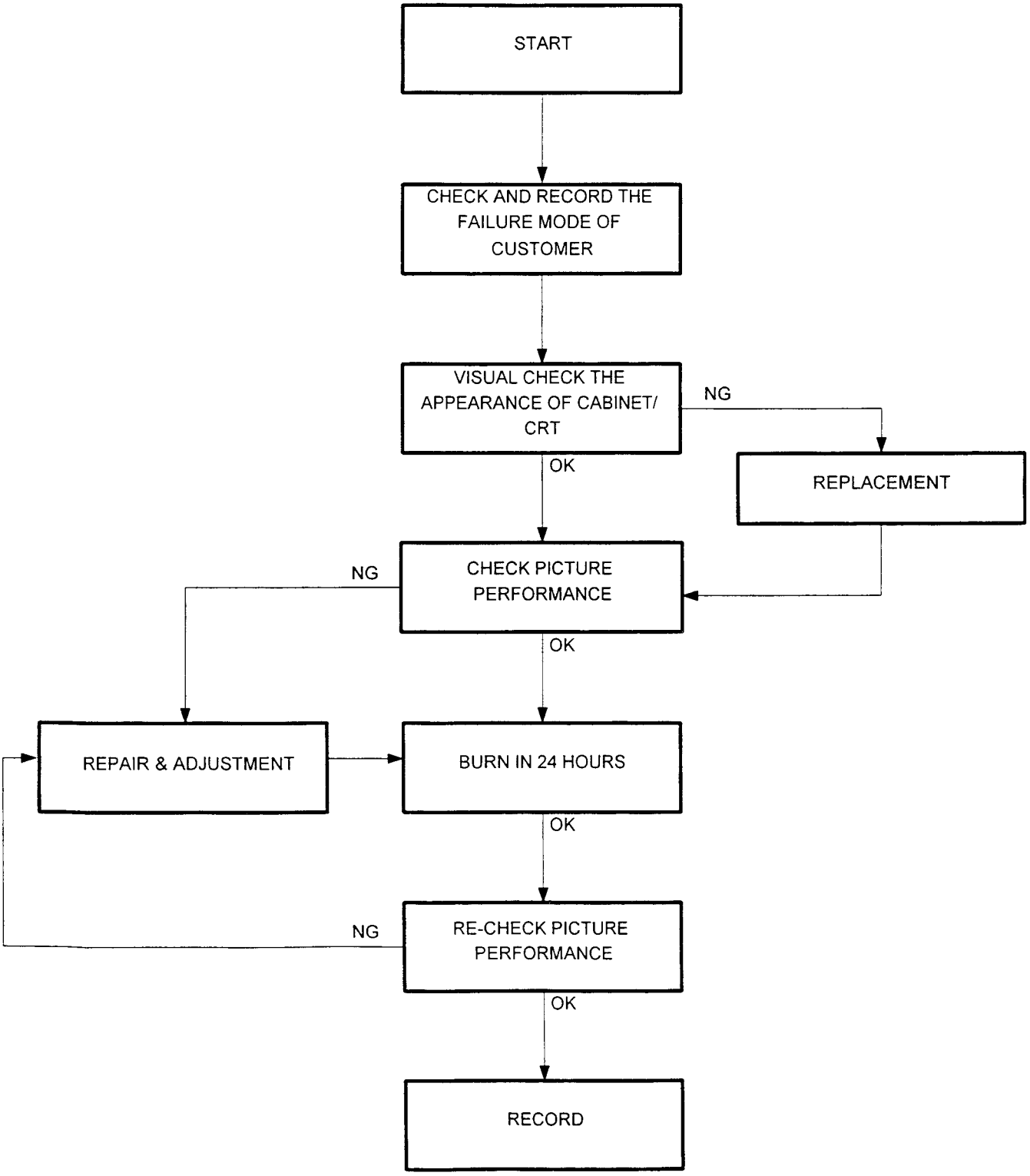
## INTRODUCTION

Enhanced repair capabilities

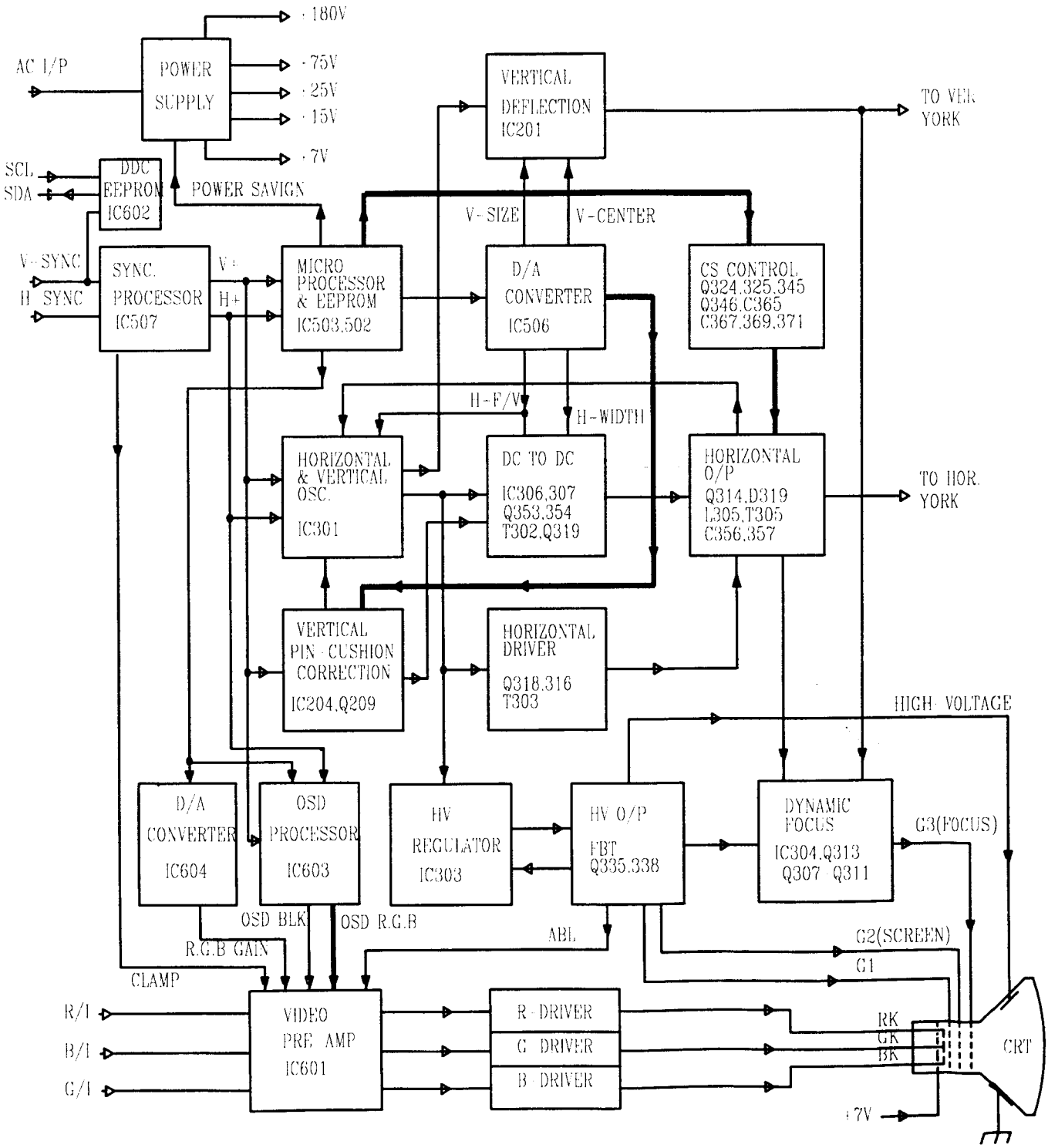
This troubleshooting guide is edited for model 1765S/1785S when service is necessary. there are four primary parts included in this troubleshooting guide which offer the easiest way to locate problem points and repair the machine to the best possible condition.

1. The Adjustment section offers the adjustable method, steps and all data of the factory's initial settings which can make the machine get the best performance at that time. By the way, before adjusting, the machine must be warmed up for at least 10 minutes and the CRT face must be in an east ward direction.
2. The Troubleshooting section has four main parts including: power supply, micon circuit, CRT, deflection & video circuit. Each offers fast repair routine and the IC, transistor voltage records against all specified signal modes. These voltage readings are measured with a HP 34401A multimeter with input impedance 10MΩ (0.1V～1000V range) and waveforms shown on circuit schematics are measured by a Tektronix TDS 520 digital oscilloscope, the monitor receives VGA-480 full white square pattern.
3. The CRT contrast list offers repairmen / technicians the contrast data when CRT replacement is necessary from a different type of CRT.
4. The Spare parts list offers the CTX part number (P/N) which is used frequently by repairmen / technicians. For details please refer to the service guide or service manual. If there is any engineering change regarding this model, CTX will issue the updated information by a non-periodical Technical Bulletin.
5. The transistor voltage records are measured from LEFT side to RIGHT side when face to the front (printed side) of transistor.

# 2.0 GENERAL MAINTENANCE PROCEDURE



# 3.0 FUNCTION BLOCK DIAGRAM



# 4.0 TIMING MODE (CTX presetting Timing)

| NAME | VGA-400 | | VGA-480 | | VESA-480 | | SVGA II | | SVGA III | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIXEL RATE | 25.2 MHZ | | 25.2 MHZ | | 31.5 MHZ | | 40 MHZ | | 50 MHZ | |
| Fh | 31.5 KHZ | | 31.5 KHZ | | 37.860 KHZ | | 37.879 KHZ | | 48.077 KHZ | |
| Fv | 70 HZ | | 60 HZ | | 72.809 HZ | | 60.3165 HZ | | 72.187 HZ | |
| INTERLACE MODE | NO | | NO | | NO | | NO | | NO | |
| OUTPUT | ANALOG | | ANALOG | | ANALOG | | ANALOG | | ANALOG | |
| FULL SCALE Vpp | 1,000 | | 1,000 | | 1,000 | | 1,000 | | 1,000 | |
| SYNC ON R/G/B | NO | | NO | | NO | | NO | | NO | |
| CONTROL BITS | 0000 0000 | | 0000 0000 | | 0000 0000 | | 0000 0000 | | 0000 0000 | |
| UNIT | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us |
| FRAME BORDER-H | 0 | 0 us | 0 | 0 us | 0 | 0 us | 0 | 0 us | 0 | 0 us |
| FRAME BORDER-V | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms |
| H TOTAL | 800 | 31.78 us | 800 | 31.78 us | 832 | 26.413 us | 1056 | 26.4 us | 1040 | 20.80 us |
| H DISPLAY | 641 | 25.42 us | 641 | 25.42 us | 640 | 20.317 us | 800 | 20.0 us | 800 | 16.0 us |
| H REAR PORCH | 48 | 1.91 us | 48 | 1.91 us | 128 | 4.063 us | 88 | 2.2 us | 64 | 1.28 us |
| H SYNC WIDTH | 96 | 3.81 us | 96 | 3.81 us | 40 | 1.270 us | 128 | 3.2 us | 120 | 2.40 us |
| H SYNC POLARITY | - | | - | | - | | + | | + | |
| VTOTAL | 450 | 14.27 ms | 525 | 16.68 ms | 520 | 13.735 ms | 628 | 16.579 ms | 666 | 13.853 ms |
| V DISPLAY | 400 | 12.71 ms | 480 | 15.25 ms | 480 | 12.678 ms | 600 | 15.840 ms | 600 | 12.480 ms |
| V REAR PORCH | 35 | 1.11 ms | 33 | 1.05 ms | 28 | 0.740 ms | 23 | 0.607 ms | 23 | 0.478 ms |
| V SYNC WIDTH | 2 | 0.06 ms | 2 | 0.06 ms | 3 | 0.079 ms | 4 | 0.106 ms | 6 | 0.125 ms |
| V SYNC POLARITY | + | | - | | - | | + | | + | |
| EQUALIZATION ? | NO | | NO | | NO | | NO | | NO | |
| SERRATION ? | NO | | NO | | NO | | NO | | NO | |
| COMP SYNC POLARITY | - | | - | | - | | - | | - | |
| FIT MODEL | 1765S/1785S | | 1765S/1785S | | 1765S/1785S | | 1765S/1785S | | 1765S/1785S | |

| NAME | 8514NI | | VESA 56K | | VESA 60K | | VESA 64K | | VESA 78K | | VESA 80K | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIXEL RATE | 65 MHZ | | 75 MHZ | | 78.75 MHZ | | 110.0 MHZ | | 135.0 MHZ | | 135.0 MHZ | |
| Fh | 48.363 KHZ | | 56.476 KHZ | | 60.023 KHZ | | 63.679 KHZ | | 77.907 KHZ | | 79.976 KHZ | |
| Fv | 60 HZ | | 70.069 HZ | | 75.029 HZ | | 59.849 HZ | | 69.888 HZ | | 75.025 HZ | |
| INTERLACE MODE | NO | | NO | | NO | | NO | | NO | | NO | |
| OUTPUT | ANALOG | | ANALOG | | ANALOG | | ANALOG | | ANALOG | | ANALOG | |
| FULL SCALE Vpp | 1,000 | | 1,000 | | 1,000 | | 1,000 | | 1,000 | | 1,000 | |
| SYNC ON R/G/B | NO | | NO | | NO | | NO | | NO | | NO | |
| CONTROL BITS | 0000 0000 | | 0000 0000 | | 0000 0000 | | 0000 0000 | | 0000 0000 | | 0000 0000 | |
| UNIT | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us | PIXEL | ms/us |
| FRAME BORDER-H | 0 | 0 us | 0 | 0 us | 0 | 0 us | 0 | 0 us | 0 | 0 us | 0 | 0 us |
| FRAME BORDER-V | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms | 0 | 0 ms |
| H TOTAL | 1344 | 20.677 us | 1328 | 17.707 us | 1312 | 16.66 us | 1696 | 15.700 us | 1709 | 12.661 us | 1688 | 12.504 us |
| H DISPLAY | 1024 | 15.754 us | 1024 | 13.653 us | 1024 | 13.003 us | 1280 | 11.852 us | 1280 | 9.481 us | 1280 | 9.481 us |
| H REAR PORCH | 160 | 2.462 us | 144 | 1.920 us | 176 | 2.235 us | 234 | 2.222 us | 266 | 1.970 us | 187 | 1.383 us |
| H SYNC WIDTH | 136 | 2.092 us | 136 | 1.813 us | 96 | 1.219 us | 144 | 1.333 us | 145 | 1.075 us | 144 | 1.067 us |
| H SYNC POLARITY | - | | - | | + | | - | | + | | - | |
| VTOTAL | 806 | 16.667ms | 806 | 14.272ms | 800 | 13.328ms | 1063 | 16.70 ms | 1088 | 13.80 ms | 1066 | 13.329 ms |
| V DISPLAY | 768 | 15.880ms | 768 | 13.599ms | 768 | 12.795ms | 1024 | 16.081ms | 1024 | 12.985ms | 1024 | 12.804 ms |
| V REAR PORCH | 29 | 0.600 ms | 29 | 0.513 ms | 28 | 0.466 ms | 34 | 0.534 ms | 39 | 0.496 ms | 38 | 0.475 ms |
| V SYNC WIDTH | 6 | 0.124 ms | 6 | 0.106 ms | 3 | 0.05 ms | 3 | 0.047 ms | 8 | 0.103 ms | 3 | 0.038 ms |
| V SYNC POLARITY | - | | - | | + | | + | | - | | + | |
| EQUALIZATION ? | NO | | NO | | NO | | NO | | NO | | NO | |
| SERRATION ? | NO | | NO | | NO | | NO | | NO | | NO | |
| COMP SYNC POLARITY | - | | - | | - | | - | | - | | - | |
| FIT MODEL | 1765S/1785S | | 1765S/1785S | | 1765S/1785S | | 1765S/1785S | | 1785S | | 1785S | |

# 5.0 ADJUSTMENT

## 5.1 1765S/1785S ADJUSTMENT

REM:PRESET MODE DATA ADJUSTMENT:

A. Turn off it.
B. Insert service port .
C. Turn on it.

Remark: Before adjusting, monitor must warm up 10 minutes and CRT must be degaussed.

| ADJUSTMENT | LOCATION | SPECIFICATION/DESCRIPTION | TIMING & PATTERN |
|---|---|---|---|
| 75V | VR101 | J87=75V ± 0.5V | 31.5KHz X'HATCH |
| 12V | VR308 | TP301=12V ± 0.1V | " |
| H.V. | VR401 | CRT ANODE=25KV ± 0.1KV (1785S=26KV ± 0.1KV) | " |
| H-HOLD | VR309 | Picture stand or flow shlowly when TP201 shorted to GND. | 31KHz ,X'HATCH |
| | VR302 | Ditto | 64KHz , X'HATCH (79KHz for 1785S) |
| FOCUS | 1.FOCUS VR1 & VR2 ON FBT.<br>2.VR304 | OPTIMUN | 64KHz "m" patterm |
| V-LINE | VR201 | $\frac{Ymax-Ymin}{Ymax+Ymin} \leqq 7\%$ | VGA-350 |
| V-SIZE | 1.EXT SW | MAX | All of PRESET modes X'HATCH |
| | 2.VR 202 | FULL SCREEN | |
| | 3.EXT SW | V-SIZE=232mm ± 7mm | |
| H-CENTER | VR 307 | ADJ. RASTER to center | 64KHz ,X'HATCH (79KHz for 1785S) |
| H-PHASE | EXT SW | $\frlvert\frac{R-L}{2}\frrvert \leqq 2.5mm$ | All of PRESET modes , X'HATCH |
| V-CENTER | EXT SW | $\frlvert\frac{U-D}{2}\frrvert \leqq 2.5mm$ | All of PRESET modes , X'HATCH |
| H-WIDTH | VR306 | Just over scan when OSD. H-WIDTH SW. is Max. | MAC 832 , X'HATCH |
| | EXT SW | H-WIDTH=310 ± 3mm | All of PRESET modes , X'HATCH |
| PCC | VR207 | Let right side be straight | 64KHz ,X'HATCH (79KHz for 1785S) |
| HOLD DOWN TEST | P406 | P406 short should be hold down | 31.5KHz FULL WHITE |

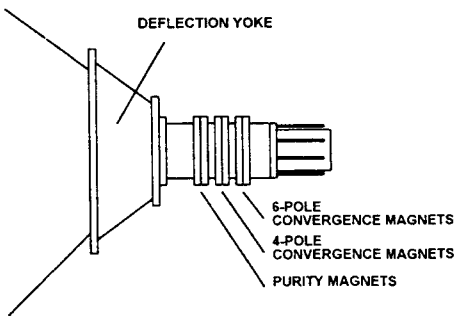
| ADJUSTMENT | LOCATION | SPECIFICATION/DESCRIPTION | TIMING & PATTERN |
|---|---|---|---|
| WHITE BALANCE PRE ADJ. | EXT. CONTRAST VR. | MAX. | VGA-480 , MOSAIC |
| | EXT. BRIGHTNESS VR. | CLICK POINT | Ditto |
| | EXT. G2 MANUAL SW. | RASTER Y=0.06FL | Ditto |
| | EXT. R.G.B. BAIS SW | RASTER x=281 ± 10,y=311 ± 10 | Ditto |
| | EXT. CONTRAST SW. | MOSAIC=50FL.. (1785S: 43FL,Toshiba CRT 36FL) | Ditto |
| WHITE BALANCE ADJ. | EXT. R.G.B. GAIN SW. | x=281 ± 10,y=311 ± 10 | VGA-480,FULL WHITE |
| | EXT. R.G.B. BIAS SW. | x=281 ± 10,y=311 ± 10 When CONTRAST VR. is in 2-3FL. | VGA-480,FULL WHITE |
| BRIGHTNESS SETTING | EXT. G2 MANUAL SW | The "2" row of color bar pattern is just visible. | VGA-400,COLOR BAR |
| | EXT. BRIGHTNESS VR. | CLICK POINT | Ditto |
| | EXT. CONTRAST VR. | MAX. | Ditto |

Brightness

reduce

| | BRIGHT BLUE | BRIGHT RED | BRIGHT PRUPLE | GREEN | BLUE + GREEN | RED + YELLOW | WHITE | |
|---|---|---|---|---|---|---|---|---|
| | | | R+B | | B+G | R+G | | |
| 15 | | | | | | | | 7 |
| 14 | | | | | | | | 6 |
| 13 | | | | | | | | 5 |
| 12 | | | | | | | | 4 |
| 11 | | | | | | | | 3 |
| 10 | | | | | | | | 2 → visible |
| 9 | | | | | | | | 1 → visible obscurely |
| 8 | | | | | | | | 0 |

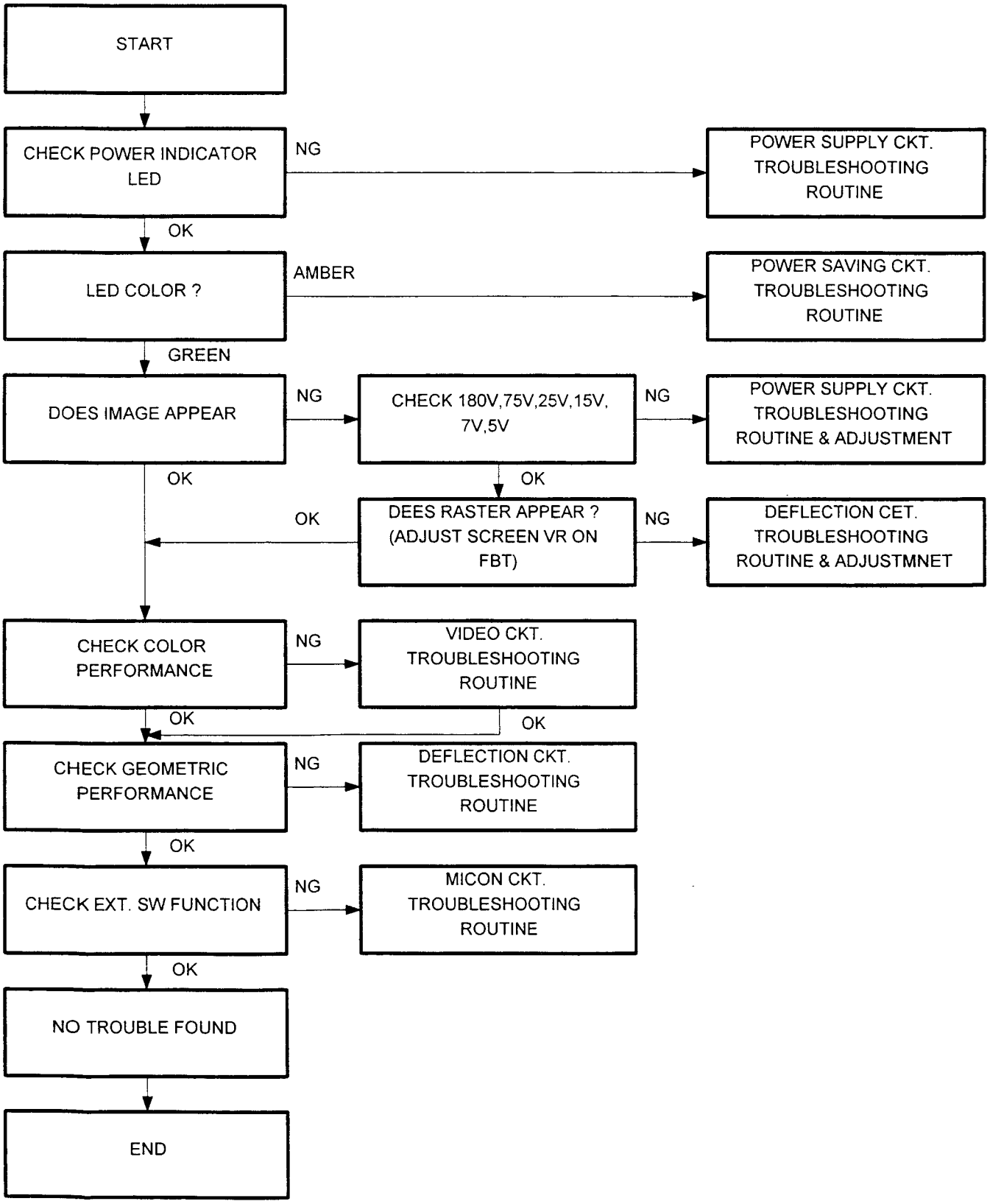
| | | | |
|---|---|---|---|
| CONVERGENCE ADJ. | 4 POLE OF PCM | Vertical RED and BLUE lines are converged by varying the angle between the two tabs. | VGA-480 , MAGERTA X'HATCH |
| | 4 POLE OF PCM | Horizontal RED and BLUE lines are converged by moving the two tabs at the same time. | VGA-480 , MAGENTA X'HATCH |
| | 6 POLE OF PCM | Vertical GREEN and MAGENTA lines are converged by varying the angle between the two tabs. | VGA-480 , X'HATCH |
| | 6 POLE OF PCM | Horizontal GREEN and MAGENTA lines are converged by moving the two tabs at the smae time. | VGA-480 , X'HATCH |



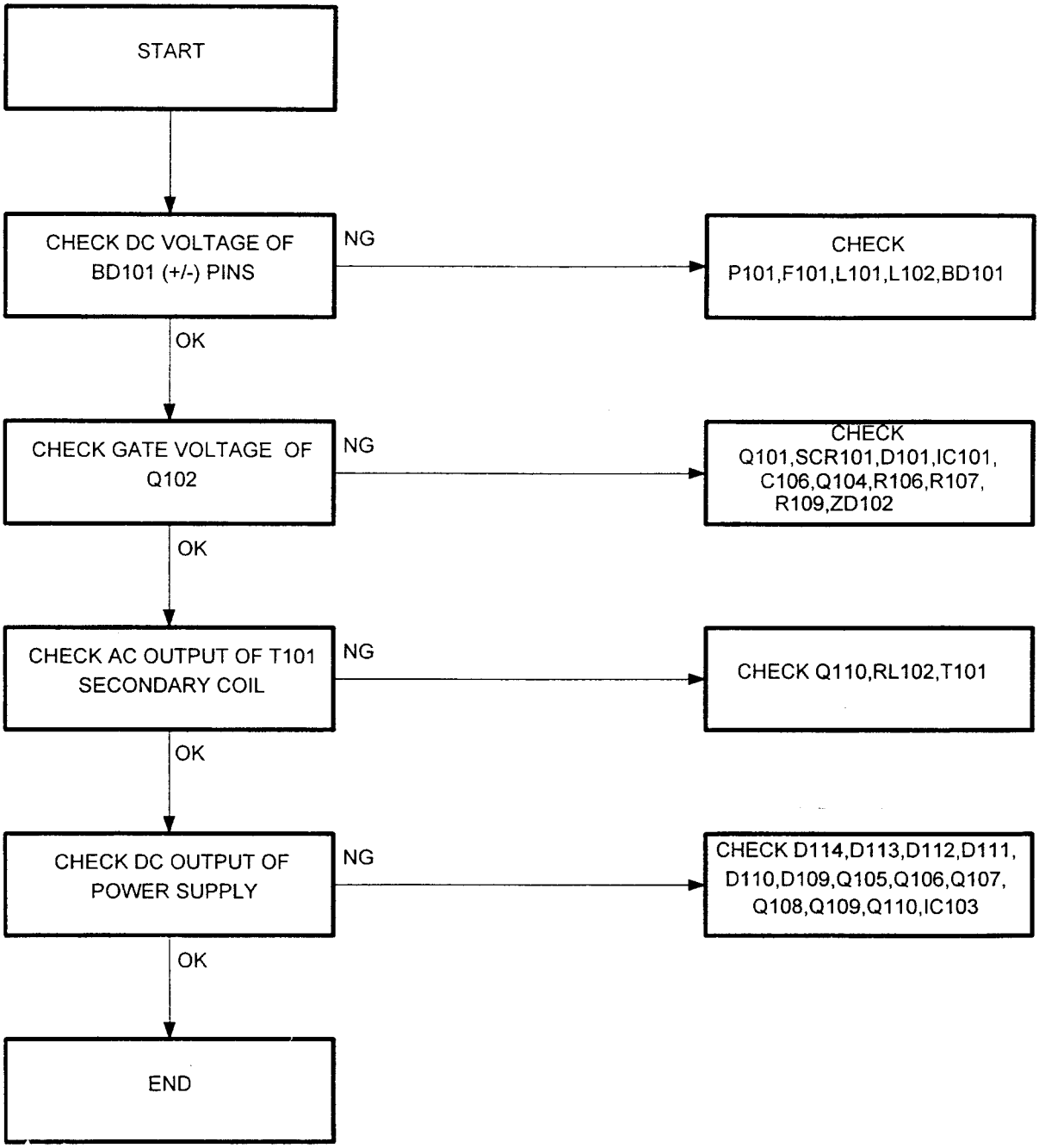

PCM:PURITY CONVERGENCE MAGNET

# 6.0 TROUBLESHOOTING

## 6.1 MAIN TROUBLESHOOTING ROUTINE



## 6.2 POWER SUPPLY CIRCUIT TROUBLESHOOTING ROUTINE



TEST CONDITIONS: TIMING : VGA-480
PATTERN: CROSS HATCH

Unit: Volt

| IC | IC101 (3842) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PIN / AC IN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 110V | 3.05 | 2.48 | 0.1 | 1.92 | 0 | 3.76 | 15.42 | 4.98 |
| 220V | 2.71 | 2.48 | 0.05 | 1.92 | 0 | 1.52 | 15.35 | 4.98 |

| IC | IC102 (PS2561) | | | | IC103 (TL431) | | |
|---|---|---|---|---|---|---|---|
| PIN / AC IN | 1 | 2 | 3 | 4 | R | A | K |
| 110V | 82.47 | 81.45 | 1.91 | 4.98 | 72.9 | 69.4 | 81.19 |
| 220V | 155.66 | 154.37 | 2.26 | 4.98 | 146.62 | 144.31 | 154.28 |

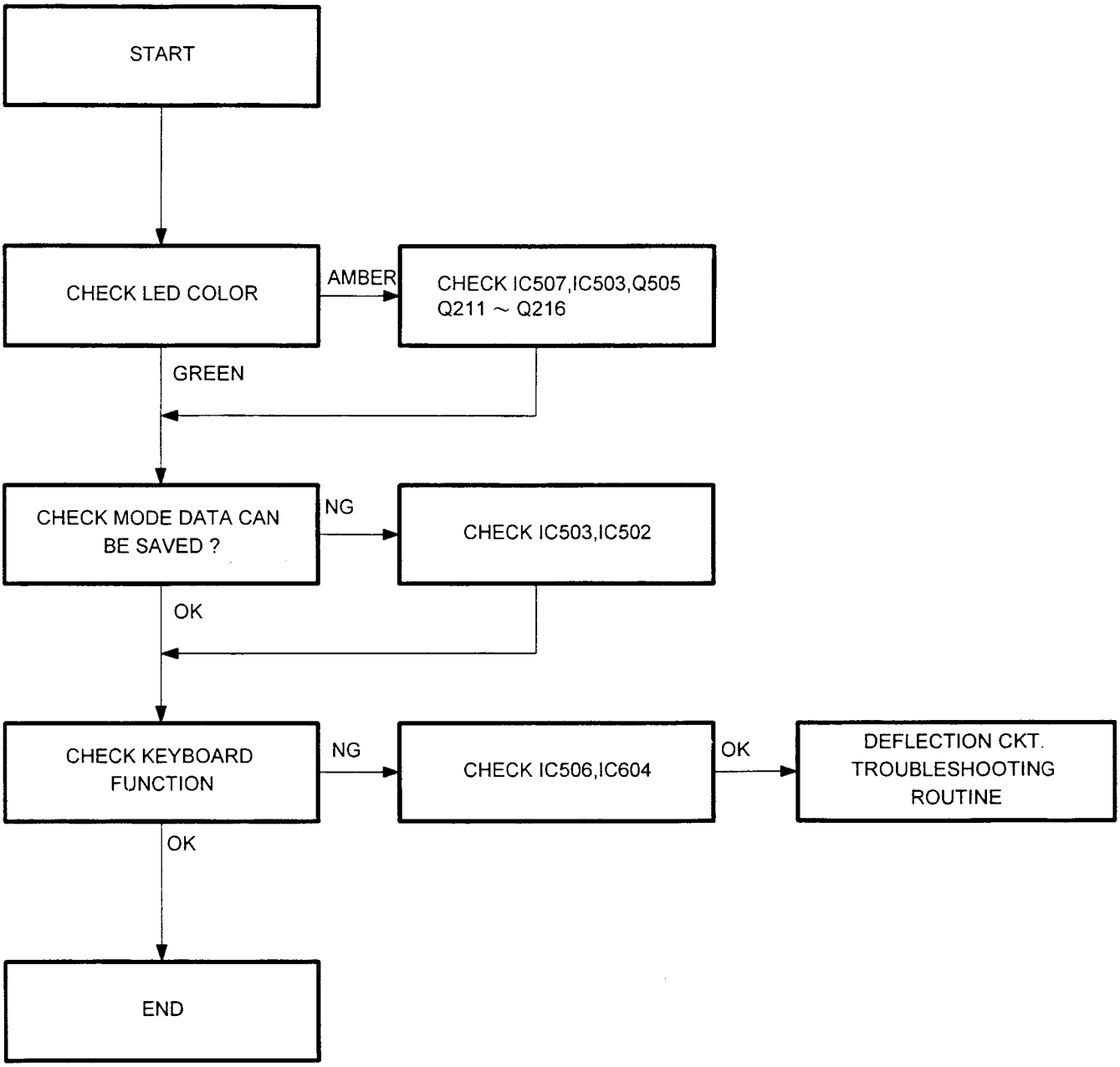
| TR | Q101 (2SC945) | | | SCR101 (BT169D) | | | Q102 (2SK955) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / AC IN | E | C | B | K | G | A | S | D | G |
| 110V | 0 | 0 | 0.67 | 2.35 | 0 | 139.5 | 0.1 | 139.54 | 3.78 |
| 220V | 0 | 0 | 0.65 | 0.78 | 0 | 300.6 | 0.05 | 298.1 | 1.5 |

| TR | Q103 (2SC945) | | | Q104 (2SCC945) | | | Q105 (A733) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / STATUS | E | C | B | E | C | B | E | C | B |
| NORMAL | 0 | 1.51 | 0.02 | 0 | 0.02 | 0.66 | 85.13 | 72.81 | 85.01 |
| STAND BY | 0 | 1.61 | 0.02 | 0 | 0.02 | 0.65 | 87.12 | 74.64 | 87.2 |
| SUSPAND | 0 | 1.51 | 0.07 | 0 | 0.07 | 0.62 | 85.67 | 85.59 | 85.21 |
| OFF | 0 | 0 | 0.69 | 0 | 0.69 | 0.35 | 87.28 | 87.06 | 86.79 |

| TR | Q106 (2SC945) | | | Q107 (BF488) | | | Q108 (BF483) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / STATUS | E | C | B | E | C | B | B | C | E |
| NORMAL | 70.38 | 84.64 | 70.26 | 73.26 | 72.88 | 72.38 | 71.09 | 70.48 | 70.56 |
| STAND BY | 72.07 | 86.86 | 72.22 | 74.42 | 74.13 | 74.07 | 72.4 | 72.15 | 72.13 |
| SUSPAND | 71.98 | 73.91 | 72.15 | 74.09 | 74.98 | 74.73 | 72.69 | 74.45 | 72.6 |
| OFF | 73.54 | 73.14 | 73.36 | 75.18 | 76.14 | 75.69 | 73.57 | 75.51 | 73.89 |

| TR | Q109 (2SC945) | | | Q110 (2SC945) | | | Q111 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / STATUS | E | C | B | B | C | E | B | C | E |
| NORMAL | 70.74 | 71.46 | 70.98 | 0.03 | 14.72 | 0 | 0.03 | 14.73 | 0 |
| STAND BY | 72.1 | 72.82 | 72.08 | 0.04 | 15.05 | 0 | 0.04 | 15.06 | 0 |
| SUSPAND | 72.69 | 72.69 | 73.36 | 0.72 | 0.07 | 0 | 0.03 | 14.09 | 0 |
| OFF | 73.91 | 73.86 | 74.18 | 0.73 | 0.07 | 0 | 0.03 | 14.15 | 0 |

## 6.3 MICON CIRCUIT TROUBLESHOOTING ROUTINE



TEST CONDITIONS: AC LINE IN:110V/60Hz
PATTERN: CROSS HATCH
STATUS : NORMAL

Unit: Volt

| IC | | IC502 (24C04) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1765S | VGA 480 | 0 | 0 | 5.01 | 0 | 5.01 | 5.01 | 0 | 5.01 |
| | SVGA II | 0 | 0 | 5.01 | 0 | 5.01 | 5.01 | 0 | 5.01 |
| | 8514NI | 0 | 0 | 5.01 | 0 | 5.01 | 5.01 | 0 | 5.01 |
| | 64K | 0 | 0 | 5.01 | 0 | 5.01 | 5.01 | 0 | 5.01 |
| 1785S | VGA 480 | 0 | 0 | 4.99 | 0 | 4.98 | 4.98 | 0 | 4.98 |
| | 8514NI | 0 | 0 | 4.99 | 0 | 4.98 | 4.98 | 0 | 4.98 |
| | 80K | 0 | 0 | 4.98 | 0 | 4.98 | 4.98 | 0 | 4.98 |

| IC | | IC503 (80C52) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1765S | VGA 480 | 0.04 | 0.04 | 0.04 | 0.04 | 0.03 | 0.03 | 4.57 | 5.15 | 0.01 | 5.01 |
| | SVGA II | 0.04 | 0.04 | 4.78 | 4.78 | 0.03 | 0.03 | 4.57 | 5.16 | 0.01 | 5.01 |
| | 8514NI | 0.03 | 4.78 | 0.03 | 4.78 | 0.03 | 0.03 | 4.57 | 5.17 | 0.01 | 5.01 |
| | 64K | 0.03 | 4.78 | 4.78 | 4.78 | 0.03 | 0.03 | 4.56 | 5.17 | 0.01 | 5.01 |
| 1785S | VGA 480 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 | 0.03 | 4.55 | 5.16 | 0.01 | 4.98 |
| | 8514NI | 4.75 | 0.03 | 4.76 | 4.76 | 0.03 | 0.03 | 4.55 | 5.16 | 0.01 | 4.98 |
| | 80K | 4.75 | 4.75 | 4.76 | 4.75 | 0.03 | 0.03 | 4.54 | 5.17 | 0.01 | 4.98 |

| IC | | IC503 (80C52) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1765S | VGA 480 | 5.01 | 0.2 | 5.01 | 4.1 | 5.01 | 5.03 | 5.03 | 3.18 | 2.36 | 0 |
| | SVGA II | 5.01 | 0.2 | 5.01 | 4.1 | 5.01 | 0.12 | 0.12 | 3.16 | 2.36 | 0 |
| | 8514NI | 5.01 | 0.2 | 5.01 | 4.1 | 5.01 | 5.03 | 5.03 | 3.18 | 2.36 | 0 |
| | 64K | 5.01 | 0.2 | 5.01 | 4.1 | 5.01 | 0.12 | 0.13 | 3.22 | 2.36 | 0 |
| 1785S | VGA 480 | 4.98 | 0.21 | 4.98 | 4.09 | 4.98 | 5 | 5 | 2.59 | 2.53 | 0 |
| | 8514NI | 4.98 | 0.23 | 4.98 | 4.06 | 4.98 | 5 | 5 | 2.59 | 2.53 | 0 |
| | 80K | 4.98 | 0.21 | 4.98 | 4.05 | 4.98 | 0.12 | 0.13 | 2.58 | 2.53 | 0 |

| IC | | IC503 (80C52) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 1765S | VGA 480 | 5.01 | 5.01 | 5.01 | 5.01 | 5 | 4.99 | 5.01 | 0.03 | 5.01 | 1.66 |
| | SVGA II | 5.01 | 5.01 | 5.01 | 5.01 | 5 | 4.99 | 5.01 | 0.03 | 5.01 | 1.66 |
| | 8514NI | 5.01 | 5.01 | 5.01 | 5.01 | 5 | 4.99 | 5.01 | 0.03 | 5.01 | 1.66 |
| | 64K | 5.01 | 5.01 | 5.01 | 5.01 | 5 | 4.99 | 5.01 | 0.03 | 5.01 | 1.66 |
| 1785S | VGA 480 | 4.98 | 4.98 | 4.98 | 4.98 | 4.98 | 4.97 | 4.98 | 0.03 | 4.98 | 1.68 |
| | 8514NI | 4.98 | 4.98 | 4.98 | 4.98 | 4.98 | 4.97 | 4.98 | 0.03 | 4.98 | 1.68 |
| | 80K | 4.98 | 4.98 | 4.98 | 4.98 | 4.98 | 4.96 | 4.98 | 0.03 | 4.98 | 1.68 |

| IC | | IC503 (80C52) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 1765S | VGA 480 | 5.01 | 5.01 | 5.01 | 0.06 | 5.01 | 5.01 | 5.01 | 3.92 | 4.72 | 5.01 |
| | SVGA II | 5.01 | 5.01 | 5.01 | 0.06 | 5.01 | 5.01 | 5.01 | 3.92 | 4.72 | 5.01 |
| | 8514NI | 5.01 | 5.01 | 5.01 | 0.06 | 5.01 | 5.01 | 5.01 | 3.92 | 4.72 | 5.01 |
| | 64K | 5.01 | 5.01 | 5.01 | 0.06 | 5.01 | 5.01 | 5.01 | 3.91 | 4.72 | 5.01 |
| 1785S | VGA 480 | 4.99 | 4.98 | 4.98 | 0.06 | 4.98 | 4.98 | 4.98 | 3.9 | 4.7 | 4.99 |
| | 8514NI | 4.98 | 4.98 | 4.98 | 0.06 | 4.98 | 4.98 | 4.98 | 3.9 | 4.7 | 4.99 |
| | 80K | 4.98 | 4.98 | 4.98 | 0.06 | 4.98 | 4.98 | 4.98 | 3.9 | 4.7 | 4.98 |

| IC | | IC504 (5002LH) | | | IC505 (TL431) | | |
|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | O | G | I | K | A | R |
| 1765S | VGA 480 | 5.01 | 0 | 6.78 | 12.35 | 0 | 2.5 |
| | SVGA II | 5.01 | 0 | 6.8 | 12.35 | 0 | 2.5 |
| | 8514NI | 5.01 | 0 | 6.82 | 12.35 | 0 | 2.5 |
| | 64K | 5.01 | 0 | 6.82 | 12.53 | 0 | 2.5 |
| 1785S | VGA 480 | 4.99 | 0 | 6.84 | 12.12 | 0 | 2.47 |
| | 8514NI | 4.99 | 0 | 6.87 | 12.12 | 0 | 2.47 |
| | 80K | 4.99 | 0 | 6.87 | 12.12 | 0 | 2.47 |

| IC | | IC506 (M62358) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1765S | VGA 480 | 5.01 | 5.01 | 5.01 | 2.7 | 2.21 | 8.06 | 2.62 | 5.18 | 2.88 | 0 | 0 |
| | SVGA II | 5.01 | 5.01 | 5.01 | 2.86 | 2.13 | 8.06 | 2.62 | 4.43 | 2.87 | 0 | 0 |
| | 8514NI | 5.01 | 5.01 | 5.01 | 2.72 | 2.15 | 8.06 | 2.54 | 4.38 | 2.87 | 0 | 0 |
| | 64K | 5.01 | 5.01 | 5.01 | 2.55 | 2.04 | 8.06 | 2.55 | 4.57 | 2.74 | 0 | 0 |
| 1785S | VGA 480 | 4.98 | 4.98 | 4.98 | 2.43 | 2.12 | 6 | 2.75 | 5.34 | 2.86 | 0 | 0 |
| | 8514NI | 4.98 | 4.98 | 4.98 | 2.61 | 2.12 | 6 | 2.67 | 4.59 | 2.85 | 0 | 0 |
| | 80K | 4.98 | 4.98 | 4.98 | 2.4 | 2.28 | 6 | 2.59 | 4.08 | 4.96 | 0 | 0 |

| IC | | IC506 (M62358) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 1765S | VGA 480 | 5.01 | 12.3 | 8.37 | 6.37 | 0.61 | 7.96 | 7.5 | 2.6 | 0 | 5.01 | 5.01 |
| | SVGA II | 5.01 | 12.3 | 7.95 | 6.37 | 1.98 | 7.34 | 7.58 | 2.57 | 0 | 5.01 | 5.01 |
| | 8514NI | 5.01 | 12.3 | 7.99 | 5.86 | 4.29 | 7.2 | 7.96 | 2.6 | 0 | 5.01 | 5.01 |
| | 64K | 5.01 | 12.3 | 7.58 | 5.25 | 7.54 | 6.22 | 8.29 | 2.51 | 0 | 5.01 | 5.01 |
| 1785S | VGA 480 | 4.98 | 12.12 | 9.16 | 5.21 | 0.6 | 8.56 | 6.07 | 2.52 | 0 | 4.98 | 4.98 |
| | 8514NI | 4.98 | 12.12 | 8.7 | 4.83 | 4.22 | 7.86 | 6.21 | 2.52 | 0 | 4.98 | 4.98 |
| | 80K | 4.98 | 12.12 | 8.61 | 3.47 | 10.98 | 6.37 | 6.39 | 2.54 | 0 | 4.98 | 4.98 |

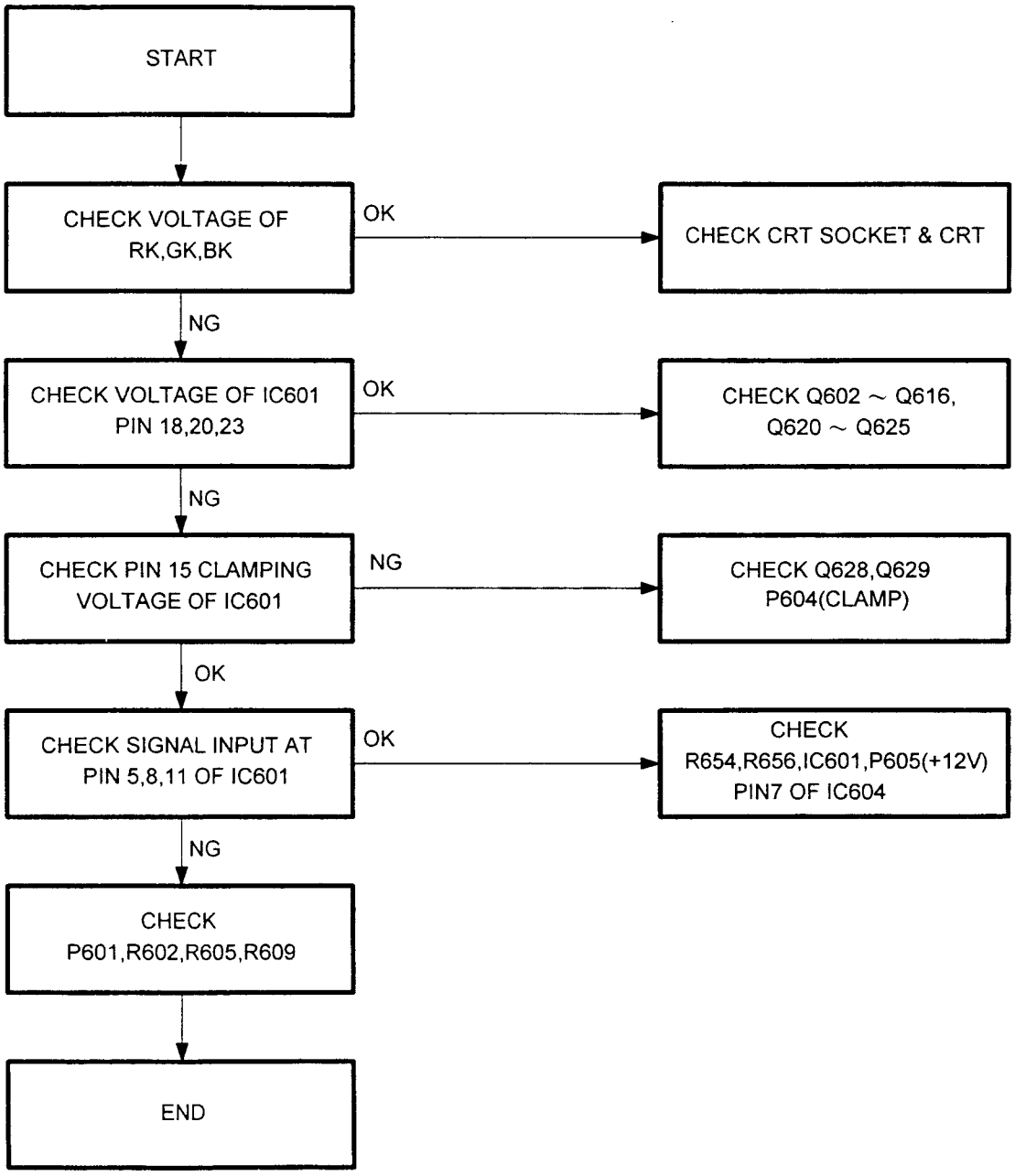
| IC | | IC507 (M52346) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1765S | VGA 480 | 5.23 | 5.23 | 4.26 | 4.26 | 0 | 6.48 | 0.78 | 6.49 | 3.65 | 2.04 |
| | SVGA II | 5.16 | 5.16 | 4.26 | 4.26 | 0 | 6.48 | 11.5 | 6.48 | 9.3 | 2.04 |
| | 8514NI | 5.23 | 5.23 | 4.26 | 4.26 | 0 | 6.49 | 0.78 | 6.49 | 2.6 | 2.04 |
| | 64K | 5.16 | 5.16 | 4.27 | 4.26 | 0 | 6.49 | 11.5 | 6.35 | 7.94 | 2.05 |
| 1785S | VGA 480 | 5.14 | 5.14 | 4.17 | 4.17 | 0 | 6.34 | 0.77 | 6.34 | 3.61 | 1.98 |
| | 8514NI | 5.14 | 5.14 | 4.17 | 4.17 | 0 | 6.34 | 0.78 | 6.34 | 2.58 | 1.99 |
| | 80K | 5.06 | 5.06 | 4.17 | 4.16 | 0 | 6.33 | 11.27 | 6.34 | 7.77 | 1.98 |

| IC | | IC507 (M52346) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1765S | VGA 480 | 0.84 | 0 | 0.21 | 0.76 | -0.22 | 12.35 | 0.22 | 5.03 | 5.03 | 3.52 |
| | SVGA II | 0.84 | 0 | 0.21 | 0.76 | -0.22 | 12.35 | 0.22 | 0.12 | 0.12 | 3.52 |
| | 8514NI | 0.76 | 0 | 0.22 | 0.67 | -0.24 | 12.35 | 0.22 | 5.03 | 5.03 | 3.52 |
| | 64K | 0.69 | 0 | 0.2 | 0.59 | -0.26 | 12.36 | 0.24 | 0.13 | 0.12 | 3.52 |
| 1785S | VGA 480 | 0.85 | 0 | 0.21 | 0.75 | -0.21 | 12.12 | 0.22 | 5 | 5 | 3.45 |
| | 8514NI | 0.76 | 0 | 0.23 | 0.67 | -0.25 | 12.12 | 0.23 | 5 | 5 | 3.44 |
| | 80K | 0.69 | 0 | 0.2 | 0.59 | -0.28 | 12.12 | 0.25 | 0.13 | 0.12 | 3.43 |

| TR | | Q501 (2SC945) | | | Q502 (2SC945) | | | Q503 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | B | C | E | B | C | E | B | C |
| 1765S | VGA 480 | 0 | 2.48 | 0.03 | 0 | 0.03 | 0.68 | 0 | 0.08 | 0.67 |
| | SVGA II | 0 | 2.48 | 0.03 | 0 | 0.03 | 0.68 | 0 | 0.08 | 0.67 |
| | 8514NI | 0 | 2.41 | 0.03 | 0 | 0.03 | 0.68 | 0 | 0.08 | 0.67 |
| | 64K | 0 | 2.41 | 0.03 | 0 | 0.03 | 0.67 | 0 | 0.09 | 0.67 |
| 1785S | VGA 480 | 0 | 2.57 | 0.03 | 0 | 0.03 | 0.67 | 0 | 0.08 | 0.66 |
| | 8514NI | 0 | 2.5 | 0.03 | 0 | 0.03 | 0.68 | 0 | 0.08 | 0.66 |
| | 80K | 0 | 2.43 | 0.03 | 0 | 0.03 | 0.67 | 0 | 0.08 | 0.66 |

| TR | | Q504 (2SC945) | | | Q505 (2SC945) | | | Q506 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | B | C | E | B | C | E |
| 1765S | VGA 480 | 0.19 | 4.99 | 0 | 0.22 | 4.1 | 0 | 0.63 | 0.01 | 0 |
| | SVGA II | 0.19 | 4.97 | 0 | 0.22 | 4.1 | 0 | 0.63 | 0.01 | 0 |
| | 8514NI | 0.19 | 4.97 | 0 | 0.22 | 4.07 | 0 | 0.63 | 0.01 | 0 |
| | 64K | 0.19 | 4.99 | 0 | 0.22 | 4.11 | 0 | 0.63 | 0.01 | 0 |
| 1785S | VGA 480 | 0.19 | 4.96 | 0 | 0.22 | 4.09 | 0 | 0.63 | 0.01 | 0 |
| | 8514NI | 0.19 | 4.94 | 0 | 0.22 | 4.07 | 0 | 0.63 | 0.01 | 0 |
| | 80K | 0.19 | 4.96 | 0 | 0.23 | 4.06 | 0 | 0.63 | 0.01 | 0 |

# 6.4 VIDEO CIRCUIT TROUBLESHOOTING ROUTINE



TEST CONDITIONS: AC LINE IN:110V/60Hz
TIMING: VGA480

Unit: Volt

| IC | IC601 (LM1282) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| VGA 480 | 0 | 0 | 0 | 0 | 2.1 | 12 | 0 | 2.1 | 12 | 0 | 2.1 | 2.06 | 2.47 | 2.16 |
| 8514NI | 0 | 0 | 0 | 0 | 2.1 | 12 | 0 | 2.1 | 12 | 0 | 2.1 | 2.06 | 2.41 | 2.16 |

| IC | IC601 (LM1282) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| VGA 480 | 3.75 | 3.64 | 7.51 | 2.62 | 7.56 | 2.64 | 0 | 12 | 2.62 | 7.47 | 2.44 | 2.5 | 2.5 | 2.2 |
| 8514NI | 3.75 | 3.56 | 7.51 | 2.51 | 7.56 | 2.53 | 0 | 12 | 2.52 | 7.47 | 2.44 | 2.5 | 2.5 | 2.2 |

| IC | IC602 (24LC21) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| VGA 480 | 0.01 | 0.01 | 0.01 | 0 | 0 | 5 | 4.64 | 5.01 |
| 8514NI | 0.02 | 0.02 | 0.02 | 0 | 0 | 5 | 4.62 | 5.01 |

| IC | IC603 (M35043) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| VGA 480 | 5.01 | 0 | 5 | 5.01 | 5.01 | 0.06 | 0 | 5.01 | 5.01 | 5.01 |
| 8514NI | 5.01 | 0 | 5 | 5.01 | 5.01 | 0.06 | 0 | 5.01 | 5.01 | 5.01 |

| IC | IC603 (M35043) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| VGA 480 | 0 | 0 | 0 | 5.01 | 0 | 5.01 | 0 | 4.66 | 4.98 | 5.01 |
| 8514NI | 0 | 0 | 0 | 5.01 | 0 | 5.01 | 0 | 4.62 | 4.97 | 5.01 |

| IC | IC604 (M62359) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| VGA 480 | 5.01 | 5.01 | 5.01 | 2.51 | 2.51 | 2.2 | 2.06 | 0 | 0 |
| 8514NI | 5.01 | 5.01 | 5.01 | 2.51 | 2.51 | 2.2 | 2.06 | 0 | 0 |

| IC | IC604 (M62359) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| VGA 480 | 5.01 | 5.01 | 2.2 | 2.51 | 2.04 | 2.83 | 0 | 5.01 | 5.01 |
| 8514NI | 5.01 | 5.01 | 2.2 | 2.51 | 2.04 | 2.2 | 0 | 5.01 | 5.01 |

| TR | Q602,Q607,Q612 (BFQ232) | | | Q603,Q608,Q613 (BFQ252) | | | Q604,Q609,Q614 (BFQ262) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | B | C | E | B | C | E | B | C | E |
| VGA 480 | 67.62 | 75.38 | 67.04 | 66.2 | 0 | 66.74 | 9.32 | 66.2 | 8.62 |
| 8514NI | 68.27 | 75.3 | 67.6 | 66.85 | 0 | 67.2 | 9.33 | 66.85 | 8.64 |

| TR | Q605,Q610,Q615 (2SC1906) | | | Q606,Q611,Q616 (BFQ162) | | | Q619 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | B | C | E | E | C | B | B | C | E |
| VGA 480 | 2.64 | 12.07 | 1.97 | 0.62 | 8.62 | 1.27 | 0 | 3.65 | 0 |
| 8514NI | 2.52 | 12.07 | 1.9 | 0.56 | 8.64 | 1.2 | 0 | 3.56 | 0 |

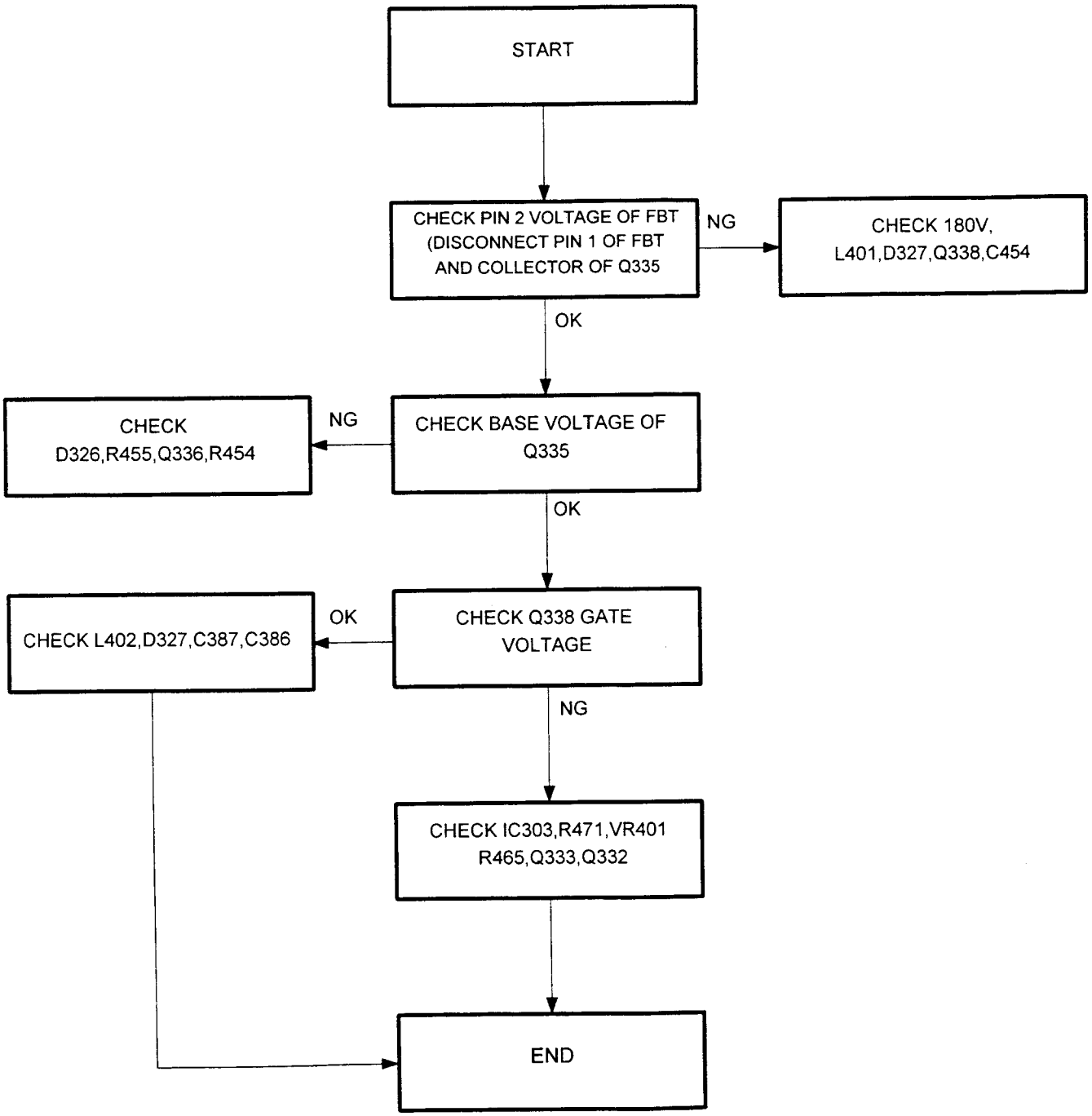
| TR | Q620,Q622,Q624 (F484) | | | Q621,Q623,Q625 (F483) | | | Q627 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | E | C | B | E | C | B | E | C | B |
| VGA 480 | 119 | O | 118.15 | 1.93 | 118.15 | 2.51 | 0 | 4.66 | -0.03 |
| 8514NI | 118.9 | O | 118.11 | 1.93 | 118.12 | 2.51 | 0 | 4.47 | -0.04 |

| TR | Q628 (2SC945) | | | Q629 (2SC945) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE | E | C | B | B | C | E | | | |
| VGA 480 | 0 | 3.76 | 0 | 0 | 0 | 0 | | | |
| 8514NI | 0 | 3.74 | 0 | 0 | 0 | 0 | | | |

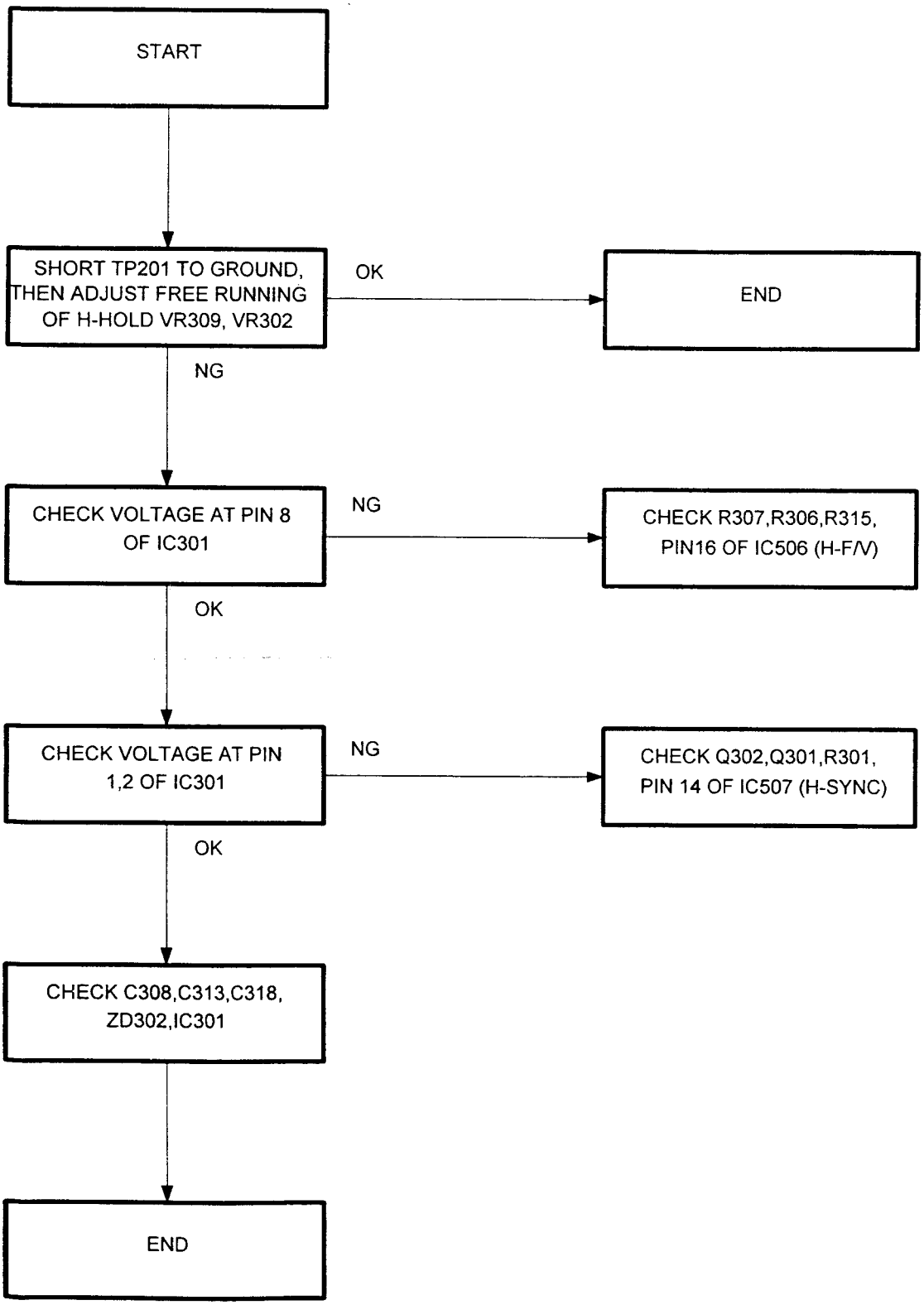
# 6.5 DEFLECTION CIRCUIT TROUBLESHOOTING ROUTINE

## 6.5.1 Horizontal Deflection Circuit

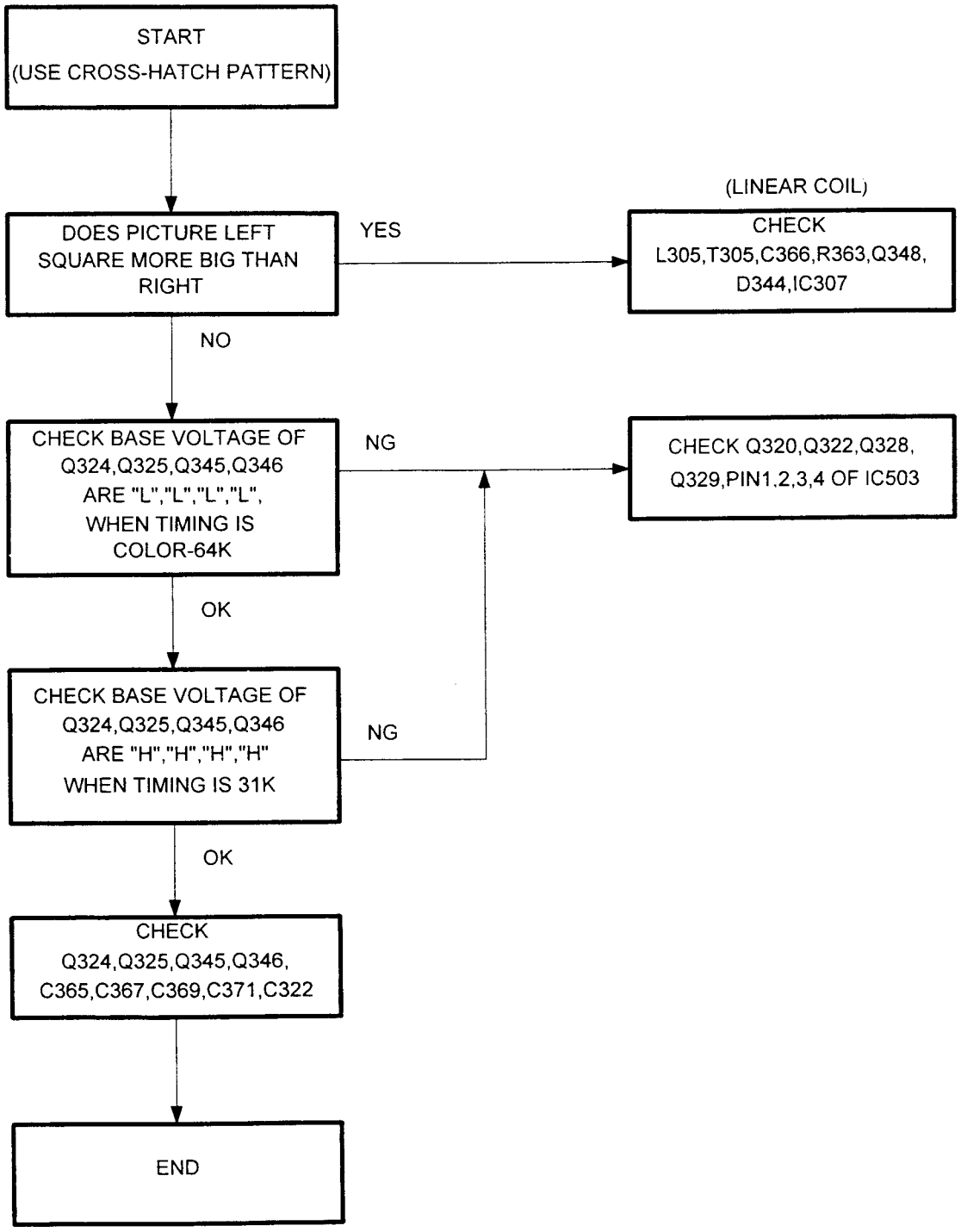
No Raster



## H-Asynchronous

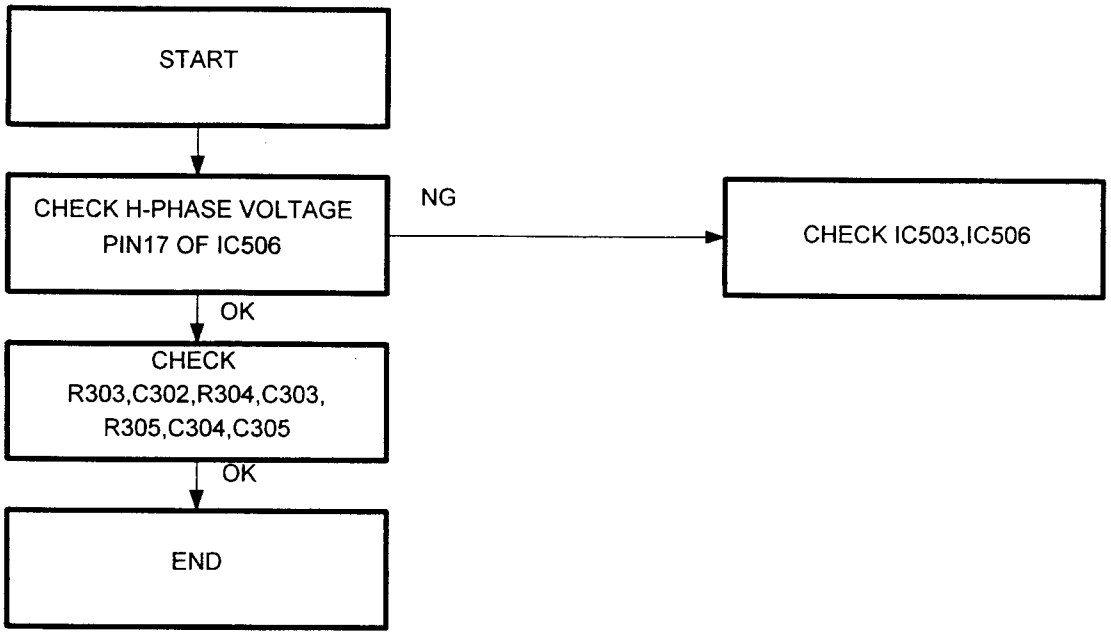


## Linearity

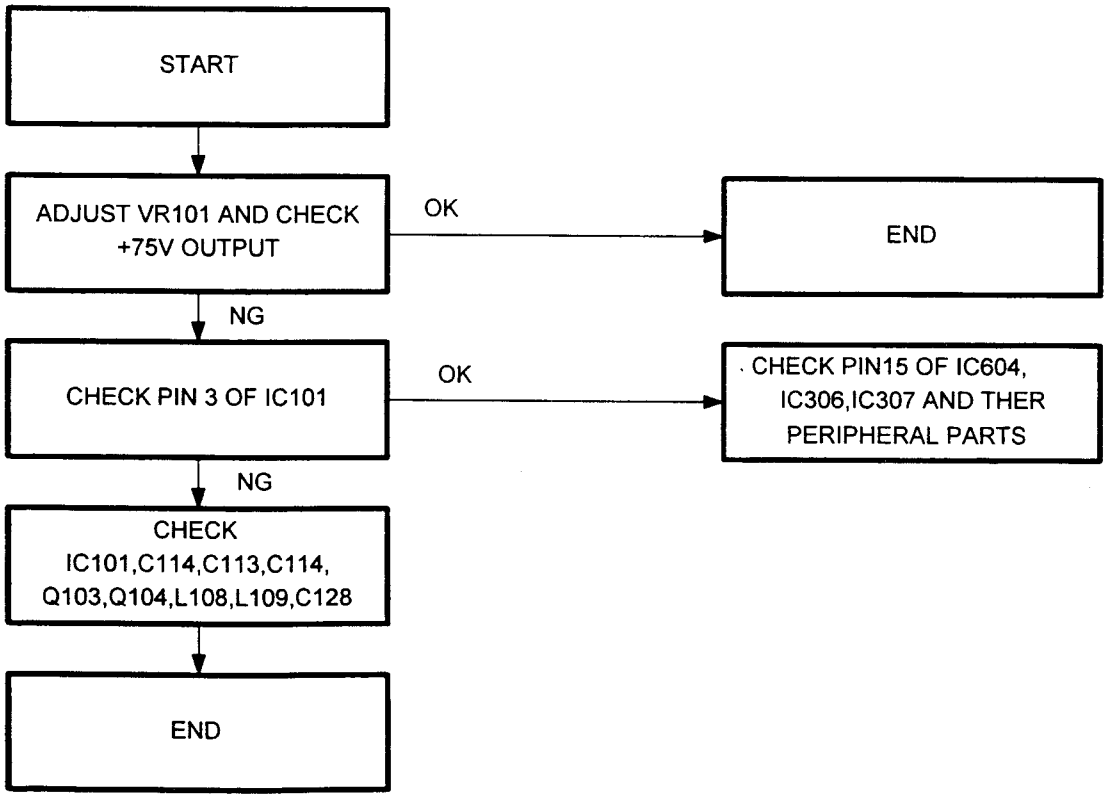



REMARK: 1. "L" means the voltage between gate and source is $<4V$ which can't turn on the MOSFET.
2. "H" means the voltage between gate and source is $\geq 4V$ which can turn on the MOSFET.

## Out of phase

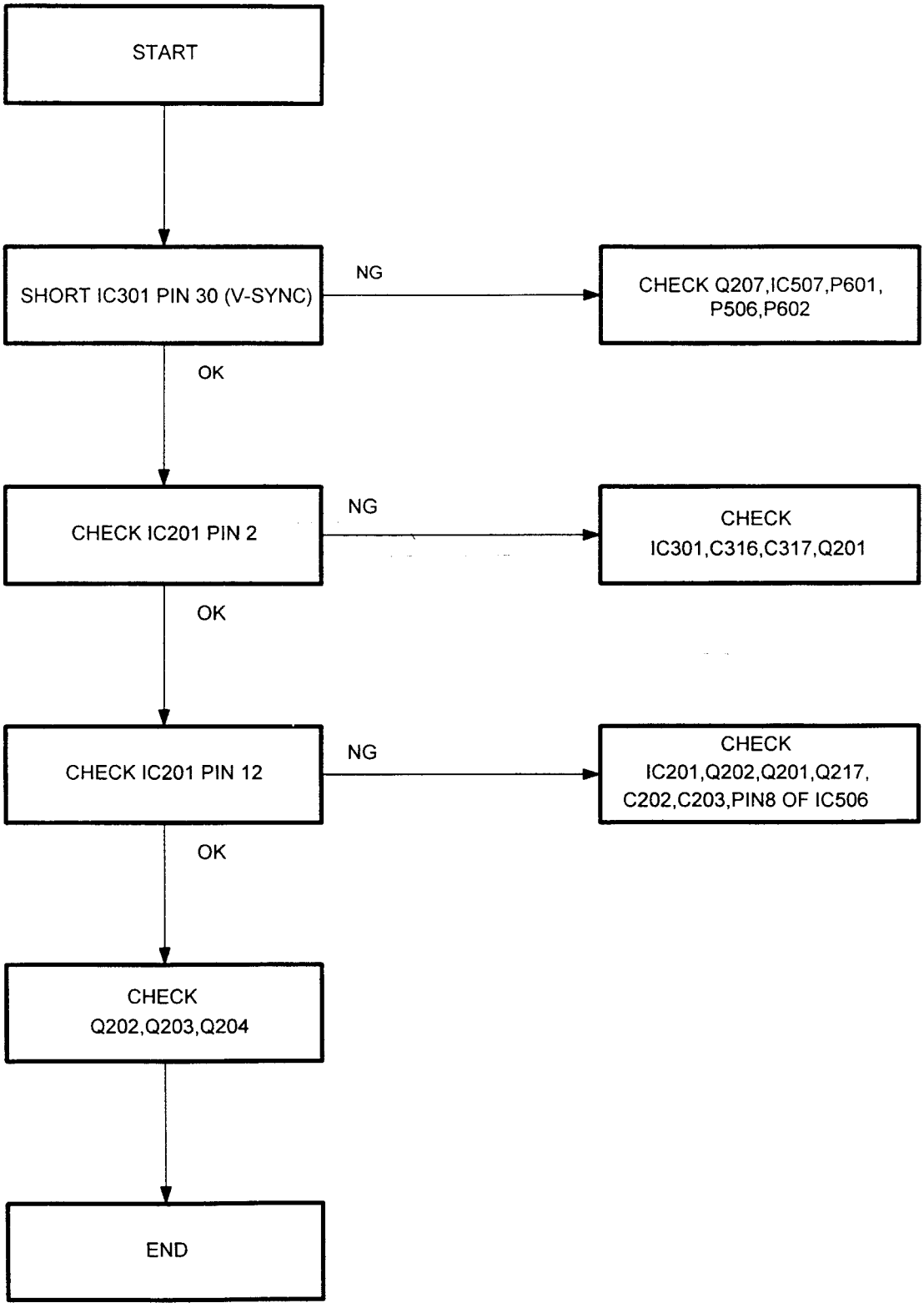



## Width Abnormal

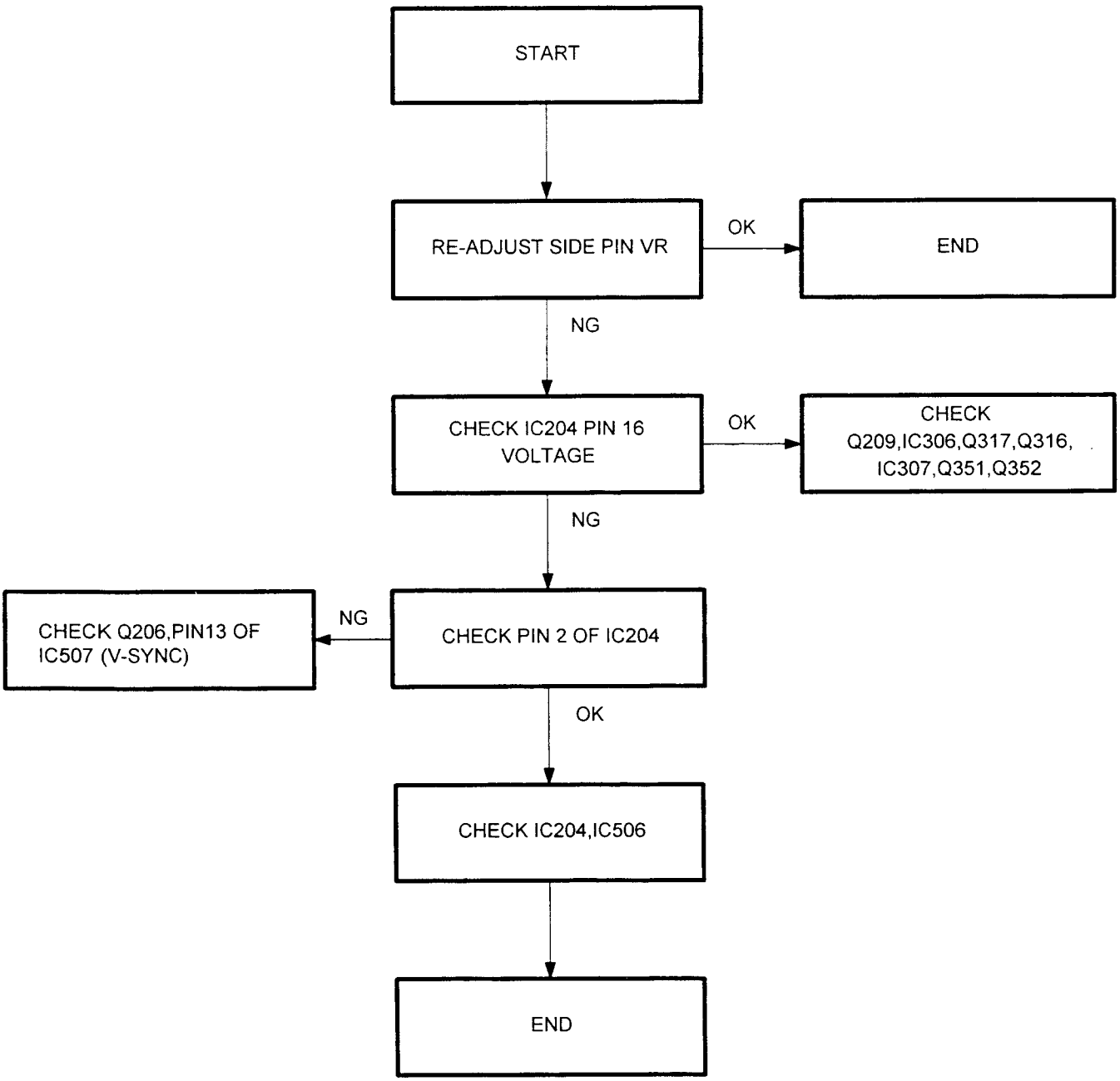


## 6.5.2 Vertical Deflection Circuit

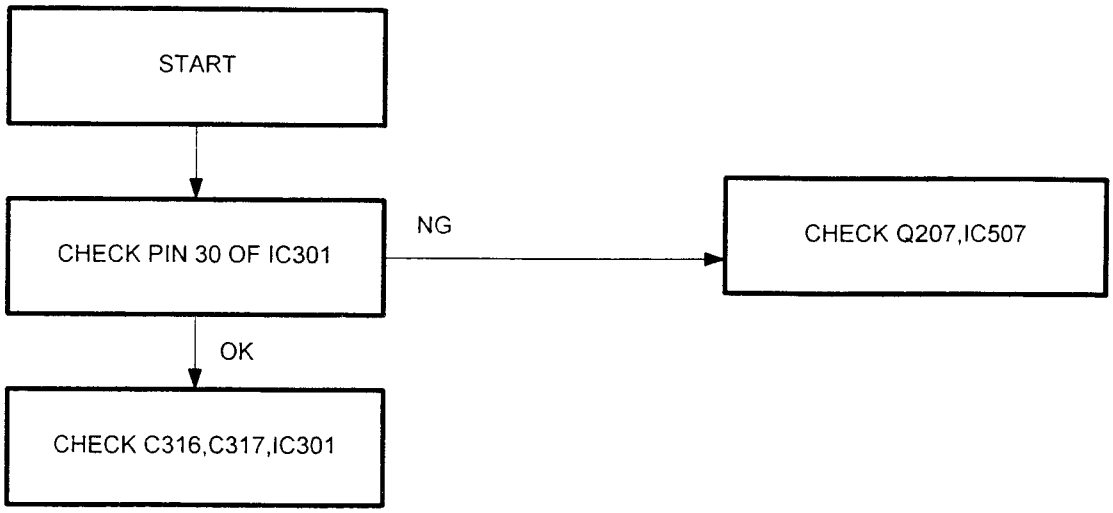
No vertical scan



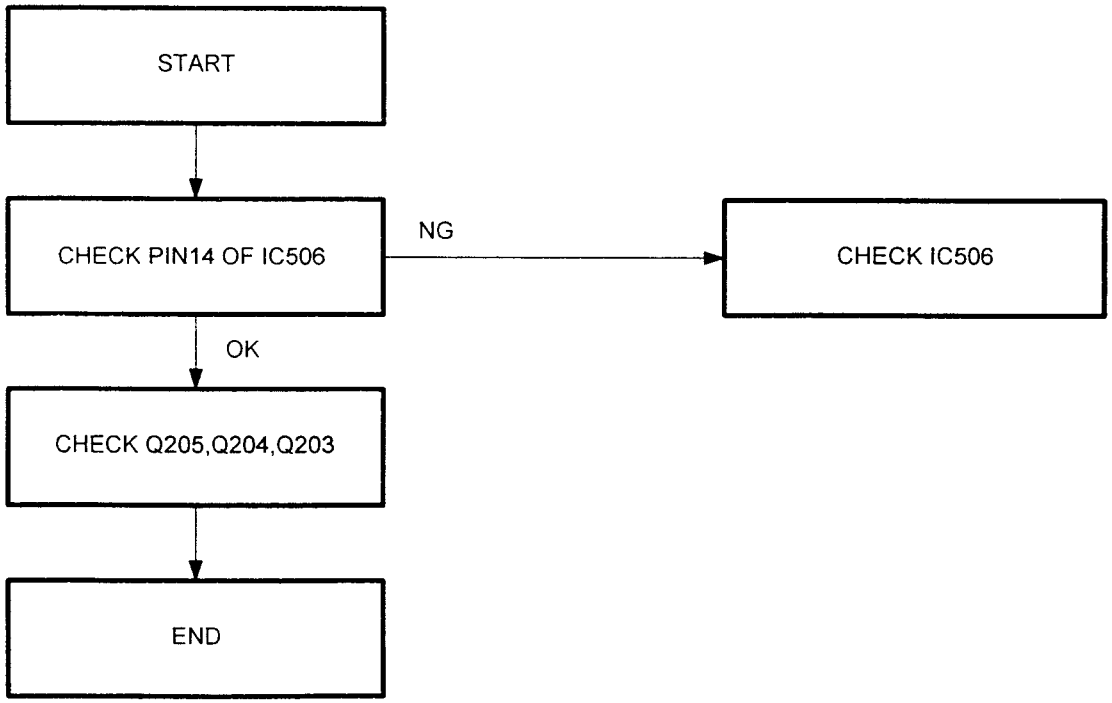
## Side pin distortion



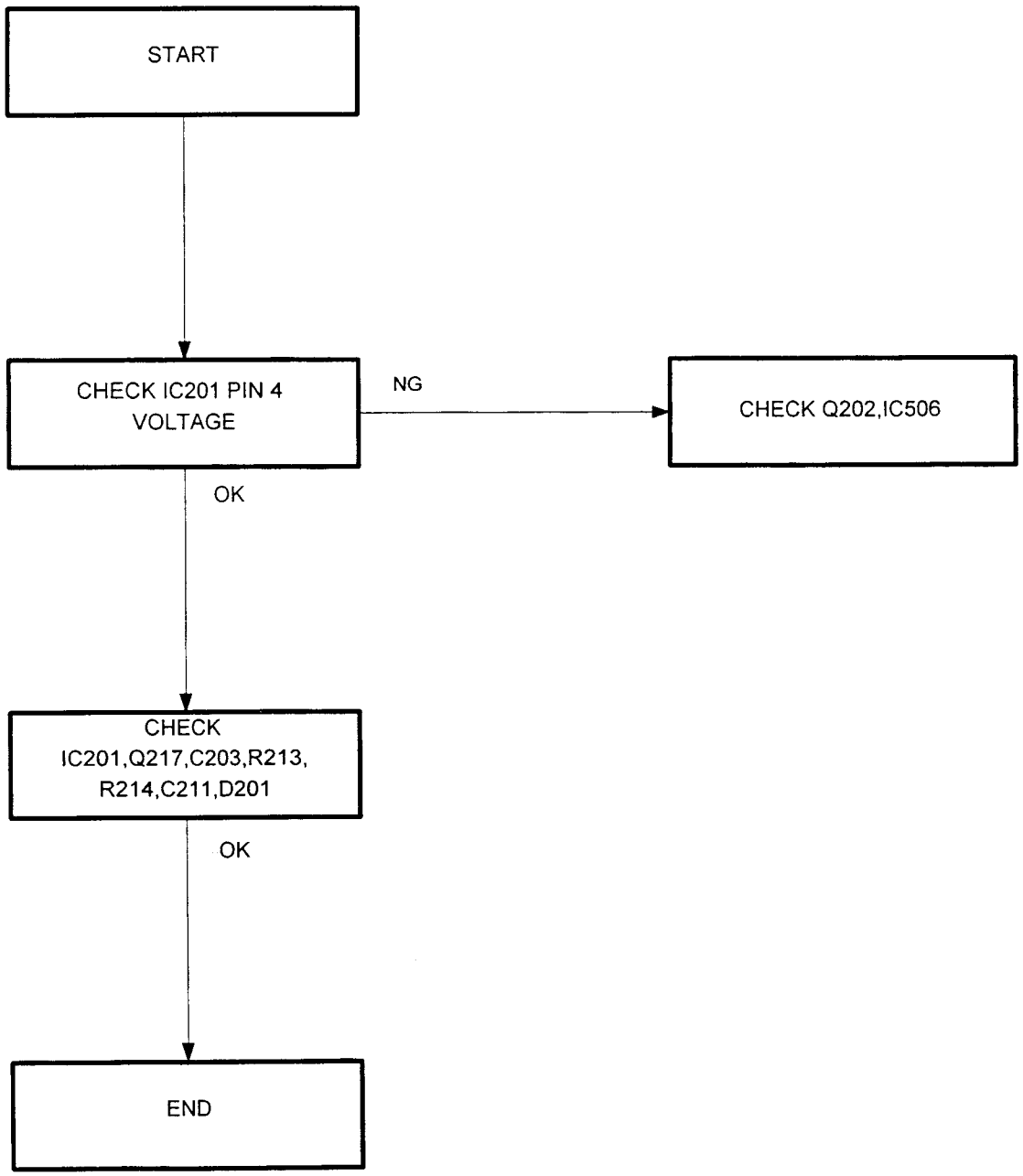
V-Asynchronous




Vertical position



## Vertical Size



TEST CONDITIONS: AC LINE IN:110V/60Hz
PATTERN: CROSS HATCH
STATUS : NORMAL

Unit: Volt

| IC | | IC201 (LA7838) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1765S | VGA 480 | 11.7 | 4.7 | 5.9 | 6.07 | 0 | 5.5 | 5.99 | 25.9 | 1 | 1.46 | 0 | 13.93 | 25.55 |
| | SVGA II | 11.7 | 4.7 | 5.9 | 6.07 | 0 | 5.47 | 6.02 | 26 | 0.95 | 1.45 | 0 | 13.93 | 25.62 |
| | 8514NI | 11.7 | 4.7 | 5.9 | 6.07 | 0 | 5.47 | 6.01 | 26 | 0.95 | 1.45 | 0 | 13.94 | 25.65 |
| | 64K | 11.7 | 4.7 | 5.9 | 6.07 | 0 | 5.47 | 6.02 | 26 | 0.93 | 1.45 | 0 | 13.88 | 25.66 |
| 1785S | VGA 480 | 11.8 | 5.8 | 5.8 | 6.04 | 0 | 6.03 | 5.43 | 26.08 | 0.92 | 1.42 | 0 | 12.63 | 25.68 |
| | 8514NI | 11.8 | 5.8 | 5.8 | 6.04 | 0 | 6 | 5.46 | 26.14 | 0.87 | 1.42 | 0 | 12.62 | 25.73 |
| | 80K | 11.8 | 5.78 | 5.78 | 6.04 | 0 | 6.03 | 5.44 | 26.18 | 1.07 | 1.42 | 0 | 12.56 | 25.84 |

| IC | | IC202 (AN614) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1765S | VGA 480 | 3.74 | 3.98 | 3.98 | 0 | 3.74 | 11.85 | 8.08 |
| | SVGA II | 3.74 | 3.98 | 3.98 | 0 | 3.74 | 11.85 | 8.08 |
| | 8514NI | 3.74 | 3.98 | 3.98 | 0 | 3.74 | 11.85 | 8.08 |
| | 64K | 3.74 | 3.99 | 3.98 | 0 | 3.74 | 11.85 | 8.08 |
| 1785S | VGA 480 | 3.75 | 3.98 | 3.98 | 0 | 3.75 | 11.89 | 8.12 |
| | 8514NI | 3.75 | 3.98 | 3.98 | 0 | 3.75 | 11.89 | 8.12 |
| | 80K | 3.75 | 3.98 | 3.98 | 0 | 3.75 | 11.89 | 8.12 |

| IC | | IC204 (AN5766) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1765S | VGA 480 | 0 | 0 | 0 | 0 | 5.82 | 5.15 | 6.4 | 11.93 | 5.96 | 2.54 | 0 |
| | SVGA II | 0 | 4.93 | 4.01 | 5.93 | 5.81 | 5.15 | 6.4 | 11.93 | 5.96 | 2.54 | 0 |
| | 8514NI | 0 | 4.94 | 4.02 | 5.93 | 5.8 | 5.14 | 6.4 | 11.93 | 5.96 | 2.54 | 0 |
| | 64K | 0 | 4.94 | 4.02 | 5.93 | 5.8 | 5.13 | 6.4 | 11.93 | 5.96 | 2.54 | 0 |
| 1785S | VGA 480 | 0 | 4.94 | 3.99 | 5.89 | 5.86 | 5.18 | 6.36 | 11.97 | 5.92 | 2.57 | 0.01 |
| | 8514NI | 0 | 4.94 | 3.99 | 5.89 | 5.86 | 5.18 | 6.36 | 11.96 | 5.92 | 2.57 | 0.01 |
| | 80K | 0 | 4.94 | 3.99 | 5.89 | 6.19 | 5.46 | 6.37 | 11.97 | 5.92 | 2.57 | 0.01 |

| IC | | IC204 (AN5766) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 1765S | VGA 480 | 0 | 5.74 | 5.79 | 0 | 3.87 | 0 | 2.75 | 2.7 | 2.22 | 2.43 | 2.21 |
| | SVGA II | 0 | 5.75 | 5.77 | 3.75 | 3.9 | 2.56 | 2.8 | 2.85 | 2.14 | 2.43 | 2.21 |
| | 8514NI | 0 | 5.75 | 5.79 | 3.76 | 3.93 | 2.61 | 2.85 | 2.72 | 2.16 | 2.44 | 2.21 |
| | 64K | 0 | 5.75 | 5.74 | 3.76 | 3.98 | 2.51 | 2.92 | 2.55 | 2.04 | 2.44 | 2.21 |
| 1785S | VGA 480 | 0.01 | 5.76 | 5.76 | 3.83 | 4.04 | 2.52 | 2.7 | 2.43 | 2.13 | 2.4 | 2.35 |
| | 8514NI | 0 | 5.76 | 5.76 | 3.83 | 4.09 | 2.52 | 2.8 | 2.61 | 2.13 | 2.4 | 2.35 |
| | 80K | 0 | 5.76 | 5.77 | 3.83 | 4.18 | 2.54 | 2.93 | 2.4 | 2.28 | 2.4 | 2.35 |

| IC | | IC301 (LA7860) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1765S | VGA 480 | 4.75 | 0 | 1.64 | 7.31 | 0 | 8.28 | 4.37 | 0.18 | 1.15 | 6.56 |
| | SVGA II | 4.75 | 0 | 1.52 | 7.29 | 0 | 8.28 | 4.37 | 0.43 | 1.4 | 6.52 |
| | 8514NI | 4.75 | 0 | 1.49 | 7.23 | 0 | 8.23 | 4.38 | 0.83 | 1.79 | 6.55 |
| | 64K | 4.75 | 0 | 1.29 | 7.2 | 0 | 8.17 | 4.39 | 1.39 | 2.35 | 6.58 |
| 1785S | VGA 480 | 4.78 | 0 | 1.77 | 7.33 | 0 | 8.35 | 4.38 | 0.17 | 1.13 | 6.6 |
| | 8514NI | 4.77 | 0 | 1.63 | 7.23 | 0 | 8.28 | 4.38 | 0.81 | 1.76 | 6.55 |
| | 80K | 4.75 | 0 | 1.32 | 7.13 | 0 | 8.16 | 4.39 | 1.98 | 2.91 | 6.54 |

| IC | | IC301 (LA7860) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1765S | VGA 480 | 5.87 | 0 | 8.36 | 9.15 | 8.34 | 4.63 | 0 | 1.1 | 4.89 | 7.13 |
| | SVGA II | 5.89 | 0 | 8.36 | 9.15 | 8.39 | 4.75 | 0 | 1.26 | 4.89 | 7.03 |
| | 8514NI | 5.89 | 0 | 8.35 | 9.15 | 8.46 | 4.94 | 0 | 1.5 | 4.89 | 6.89 |
| | 64K | 5.89 | 0 | 8.33 | 9.12 | 8.55 | 5.21 | 0 | 1.84 | 4.88 | 6.66 |
| 1785S | VGA 480 | 5.95 | 0 | 8.42 | 9.22 | 8.4 | 4.66 | 0.01 | 1.11 | 4.92 | 7.18 |
| | 8514NI | 5.94 | 0 | 8.4 | 9.19 | 8.5 | 4.95 | 0.01 | 1.46 | 4.91 | 6.94 |
| | 80K | 5.92 | 0 | 8.35 | 9.15 | 8.69 | 5.5 | 0.01 | 2.13 | 4.88 | 6.45 |

| IC | | IC301 (LA7860) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 1765S | VGA 480 | 12 | 5.02 | 0 | 0.07 | 0.09 | 0 | 1.86 | 6.1 | 5.8 | 5.94 |
| | SVGA II | 12 | 5.01 | 0 | 0.07 | 0.09 | 0 | 1.87 | 6.1 | 5.8 | 5.98 |
| | 8514NI | 12 | 5.02 | 0 | 0.07 | 0.09 | 0 | 1.87 | 6.1 | 5.8 | 5.99 |
| | 64K | 12 | 5.03 | 0 | 0.07 | 0.09 | 0 | 1.86 | 6.1 | 5.8 | 5.99 |
| 1785S | VGA 480 | 12.08 | 5.02 | 0 | 0.06 | 0.07 | 0 | 1.9 | 614 | 5.86 | 6.02 |
| | 8514NI | 12.07 | 5.02 | 0 | 0.06 | 0.07 | 0 | 1.9 | 6.13 | 5.86 | 6.02 |
| | 80K | 12.06 | 5.04 | 0 | 0.07 | 0.09 | 0 | 2.11 | 6.13 | 5.56 | 6 |

| IC | | IC303 (3843) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1765S | VGA 480 | 1.68 | 2.47 | 0.06 | 0.3 | 0 | 2.73 | 10.4 | 4.98 |
| | SVGA II | 1.65 | 2.47 | 0.06 | 0.3 | 0 | 3.35 | 10.4 | 4.98 |
| | 8514NI | 1.63 | 2.48 | 0.06 | 0.27 | 0 | 4.46 | 10.4 | 4.98 |
| | 64K | 1.62 | 2.48 | 0.06 | 0.3 | 0 | 6.32 | 10.4 | 4.98 |
| 1785S | VGA 480 | 1.63 | 2.48 | 0.07 | 0.38 | 0 | 2.33 | 10.54 | 4.98 |
| | 8514NI | 1.58 | 2.48 | 0.06 | 0.35 | 0 | 3.71 | 10.51 | 4.98 |
| | 80K | 1.61 | 2.48 | 0.07 | 0.43 | 0 | 7.02 | 10.46 | 4.98 |

| TR | | IC304 (BA6110) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1765S | VGA 480 | 6.04 | 6.04 | 1.11 | 1.10 | 0 | 6.05 | 6.05 | 6.13 | 11.96 |
| | SVGA II | 6.05 | 6.05 | 1.11 | 1.09 | 0 | 6.06 | 6.06 | 6.14 | 11.96 |
| | 8514NI | 6.05 | 6.05 | 1.1 | 1.06 | 0 | 6.09 | 6.09 | 6.17 | 11.96 |
| | 64K | 6.06 | 6.06 | 1.1 | 1.02 | 0 | 6.11 | 6.11 | 6.2 | 11.96 |
| 1785S | VGA 480 | 5.91 | 5.91 | 1.08 | 1.05 | 0 | 5.97 | 5.97 | 6.05 | 12 |
| | 8514NI | 5.91 | 5.91 | 1.08 | 1.02 | 0 | 6.02 | 6.02 | 6.1 | 12 |
| | 80K | 5.91 | 5.92 | 1.07 | 0.94 | 0 | 6.06 | 6.06 | 6.16 | 12 |

| IC | | IC305 (TL431) | | | IC306 (LM358) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | R | A | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1765S | VGA 480 | 2.48 | 0 | 8.7 | 7.22 | 5.94 | 5.97 | 0 | 7.8 | 7.8 | 7.8 | 11.97 |
| | SVGA II | 2.48 | 0 | 7.87 | 7.9 | 5.94 | 5.97 | 0 | 8.05 | 8.06 | 8.06 | 11.97 |
| | 8514NI | 2.49 | 0 | 6.07 | 7.9 | 5.94 | 5.97 | 0 | 7.75 | 7.76 | 7.76 | 11.97 |
| | 64K | 2.49 | 0 | 4.39 | 7.9 | 5.96 | 5.97 | 0 | 7.39 | 7.39 | 7.39 | 11.97 |
| 1785S | VGA 480 | 2.47 | 0 | 7.63 | 7.38 | 5.99 | 6 | 0 | 7.88 | 7.88 | 7.88 | 12 |
| | 8514NI | 2.47 | 0 | 5.07 | 8.05 | 5.99 | 6 | 0 | 7.8 | 7.81 | 7.81 | 12 |
| | 80K | 2.47 | 0 | 3.05 | 7.83 | 6.02 | 6 | 0 | 7.08 | 7.08 | 7.08 | 12 |

| IC | | IC307 (2903) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1765S | VGA 480 | 0.32 | 8.74 | 2.58 | 0 | 7.18 | 8.74 | 8.39 | 26.15 |
| | SVGA II | 0.4 | 8.15 | 2.58 | 0 | 7.83 | 8.16 | 10.54 | 26.22 |
| | 8514NI | 0.57 | 7.09 | 2.58 | 0 | 7.89 | 7.1 | 13.2 | 26.24 |
| | 64K | 0.84 | 5.52 | 2.58 | 0 | 7.91 | 5.52 | 17.22 | 26.26 |
| 1785S | VGA 480 | 0.53 | 9.32 | 4.33 | 0 | 7.49 | 9.32 | 7.23 | 26.35 |
| | 8514NI | 0.93 | 7.99 | 4.33 | 0 | 8.09 | 7.99 | 11.11 | 26.41 |
| | 80K | 1.96 | 5.34 | 4.33 | 0 | 7.82 | 5.33 | 17.5 | 26.43 |

| IC | | IC310 (LM317) | | | IC311 (LM317) | | |
|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | R | O | I | R | O | I |
| 1765S | VGA 480 | 10.71 | 11.97 | 19.36 | 10.82 | 12.06 | 14.73 |
| | SVGA II | 10.71 | 11.97 | 19.34 | 10.82 | 12.07 | 14.77 |
| | 8514NI | 10.71 | 11.97 | 19.19 | 10.82 | 12.07 | 14.8 |
| | 64K | 10.71 | 11.97 | 19.04 | 10.82 | 12.07 | 14.8 |
| 1785S | VGA 480 | 10.75 | 12 | 19.54 | 10.85 | 12.1 | 14.86 |
| | 8514NI | 10.75 | 12 | 19.33 | 10.85 | 12.1 | 14.92 |
| | 80K | 10.75 | 12 | 19.09 | 10.85 | 12.1 | 14.96 |

| TR | | Q201 (2SC945) | | | Q202 (2SC945) | | | Q203 (D882) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | E | C | B | B | C | E |
| 1765S | VGA 480 | 0 | 4.7 | 0 | 2.24 | 6.07 | 2.74 | 9.53 | 26.18 | 9.48 |
| | SVGA II | 0 | 4.7 | 0 | 2.16 | 6.08 | 2.66 | 10.38 | 26.25 | 10.34 |
| | 8514NI | 0 | 4.7 | 0 | 2.16 | 6.08 | 2.65 | 10.24 | 26.27 | 10.2 |
| | 64K | 0 | 4.7 | 0 | 2.14 | 6.08 | 2.63 | 11.06 | 26.29 | 11.02 |
| 1785S | VGA 480 | 0 | 5.8 | 0 | 2.53 | 6.04 | 3.03 | 8.18 | 26.39 | 8.12 |
| | 8514NI | 0 | 5.8 | 0 | 2.44 | 6.04 | 2.93 | 9.08 | 26.44 | 9.03 |
| | 80K | 0 | 5.78 | 0 | 3.04 | 6.03 | 3.55 | 9.27 | 26.46 | 9.22 |

| TR | | Q204 (B772) | | | Q205 (2SC945) | | | Q206 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | B | C | E | E | C | B |
| 1765S | VGA 480 | 8.9 | 0 | 9.48 | 2.34 | 8.98 | 1.76 | 0.02 | 11.93 | 0.21 |
| | SVGA II | 9.78 | 0 | 10.34 | 2.25 | 9.8 | 1.66 | 0.04 | 11.94 | 0.22 |
| | 8514NI | 9.64 | 0 | 10.2 | 2.26 | 9.68 | 1.68 | 0.04 | 11.93 | 0.22 |
| | 64K | 10.47 | 0 | 11.02 | 2.16 | 10.47 | 1.58 | 0.02 | 11.94 | 0.2 |
| 1785S | VGA 480 | 7.62 | 0 | 8.12 | 2.52 | 7.62 | 1.92 | 0.02 | 11.97 | 0.21 |
| | 8514NI | 8.47 | 0 | 9.08 | 2.4 | 8.5 | 1.8 | 0.04 | 11.97 | 0.22 |
| | 80K | 8.66 | 0 | 9.24 | 2.4 | 8.7 | 1.8 | 0.02 | 11.96 | 0.2 |

| TR | | Q207 (2SC945) | | | Q208 (2SC945) | | | Q209 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | E | C | B | E | C | B |
| 1765S | VGA 480 | 0.02 | 12.04 | 0.21 | 0 | 22.31 | 0.02 | 3.3 | 11.93 | 3.88 |
| | SVGA II | 0.03 | 12.04 | 0.22 | 0 | 21.96 | 0.02 | 3.3 | 11.93 | 3.9 |
| | 8514NI | 0.03 | 12.05 | 0.22 | 0 | 21.35 | 0.02 | 3.3 | 11.93 | 3.93 |
| | 64K | 0.01 | 12.06 | 0.2 | 0 | 20.44 | 0.02 | 3.4 | 11.93 | 3.98 |
| 1785S | VGA 480 | 0.02 | 12.07 | 0.21 | 0 | 22.8 | 0 | 3.45 | 11.97 | 4.04 |
| | 8514NI | 0.03 | 12.07 | 0.22 | 0 | 21.96 | 0 | 3.51 | 11.97 | 4.09 |
| | 80K | 0.01 | 12.06 | 0.2 | 0 | 20.23 | 0 | 3.6 | 11.97 | 4.18 |

| TR | | Q210 (2SC945) | | | Q211 (2SC945) | | | Q212 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | B | C | E | B | C | E |
| 1765S | VGA 480 | 0.9 | 7.72 | 1.5 | 0 | 10.82 | 0 | 0.62 | 0 | 0 |
| | SVGA II | 0.9 | 7.68 | 1.5 | 0 | 10.82 | 0 | 0.61 | 0 | 0 |
| | 8514NI | 0.9 | 7.67 | 1.51 | 0 | 10.82 | 0 | 0.61 | 0 | 0 |
| | 64K | 0.9 | 7.65 | 1.5 | 0 | 10.82 | 0 | 0.61 | 0 | 0 |
| 1785S | VGA 480 | 0.91 | 7.74 | 1.51 | 0 | 10.86 | 0 | 0.61 | 0 | 0 |
| | 8514NI | 0.92 | 7.71 | 1.51 | 0 | 10.9 | 0 | 0.61 | 0 | 0 |
| | 80K | 0.92 | 7.68 | 1.51 | 0 | 10.85 | 0 | 0.61 | 0 | 0 |

| TR | | Q213 (B562) | | | Q214 (2SC945) | | | Q215 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | B | C | E | B | C | E |
| 1765S | VGA 480 | 7.08 | 6.9 | 6.22 | 0.69 | 0.78 | 0 | 5.16 | 6.96 | 4.78 |
| | SVGA II | 7.1 | 6.9 | 6.24 | 0.69 | 0.78 | 0 | 5.17 | 6.98 | 4.78 |
| | 8514NI | 7.1 | 6.9 | 6.2 | 0.7 | 0.8 | 0 | 5.17 | 6.99 | 4.81 |
| | 64K | 7.12 | 6.9 | 6.26 | 0.69 | 0.78 | 0 | 5.17 | 6.99 | 4.81 |
| 1785S | VGA 480 | 7.13 | 6.9 | 6.25 | 0.69 | 0.63 | 0 | 5.16 | 7.01 | 4.79 |
| | 8514NI | 7.15 | 6.92 | 6.28 | 0.69 | 0.63 | 0 | 5.17 | 7.03 | 4.81 |
| | 80K | 7.16 | 6.92 | 6.28 | 0.68 | 0.63 | 0 | 5.17 | 7.04 | 4.81 |

| TR | | Q216 (2SA733) | | | Q217 (2SA733) | | | Q218 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | E | C | B | B | C | E |
| 1765S | VGA 480 | 6.32 | 6.96 | 6.96 | 5.5 | 0 | 5.5 | 0.62 | 10.73 | 0.2 |
| | SVGA II | 6.34 | 6.98 | 6.98 | 5.47 | 0 | 5.47 | 0.62 | 10.76 | 0.2 |
| | 8514NI | 6.36 | 6.98 | 6.99 | 5.47 | 0 | 5.47 | 0.61 | 10.76 | 0.2 |
| | 64K | 6.37 | 6.99 | 6.99 | 5.47 | 0 | 5.47 | 0.61 | 10.76 | 0.2 |
| 1785S | VGA 480 | 6.37 | 7 | 7.01 | 6.03 | 0 | 6.04 | 0.62 | 10.67 | 0.23 |
| | 8514NI | 6.4 | 7.03 | 7.03 | 6 | 0 | 6.01 | 0.62 | 10.7 | 0.22 |
| | 80K | 6.4 | 7.03 | 7.04 | 6.02 | 0 | 6.02 | 0.62 | 10.7 | 0.22 |

| TR | | Q219 (2SA733) | | | Q220 (2SA952) | | | Q221 (2SC2001) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | B | C | E | B | C | E |
| 1765S | VGA 480 | 11.49 | 2.76 | 10.94 | 8.04 | 0 | 7.44 | 8.04 | 12.07 | 7.44 |
| | SVGA II | 11.51 | 2.8 | 10.97 | 8.04 | 0 | 7.44 | 8.04 | 12.07 | 7.44 |
| | 8514NI | 11.51 | 2.85 | 10.96 | 8.04 | 0 | 7.49 | 8.04 | 12.07 | 7.49 |
| | 64K | 11.51 | 2.92 | 10.96 | 8.04 | 0 | 7.45 | 8.04 | 12.07 | 7.45 |
| 1785S | VGA 480 | 11.45 | 2.7 | 10.91 | 6.01 | 0 | 6.6 | 6.01 | 12.1 | 6.6 |
| | 8514NI | 11.47 | 2.79 | 10.93 | 6.01 | 0 | 6.6 | 6.02 | 12.1 | 6.58 |
| | 80K | 11.48 | 2.92 | 10.93 | 6.01 | 0 | 6.6 | 6.01 | 12.1 | 6.6 |

| TR | | Q301 (2SC945) | | | Q302 (2SC945) | | | Q303 (2SA733) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | B | C | E | B | C | E |
| 1765S | VGA 480 | 0.76 | 12.04 | 0.65 | 0.65 | 0 | 0 | 4.53 | 0.22 | 4.64 |
| | SVGA II | 0.76 | 12.04 | 0.68 | 0.65 | 0 | 0 | 4.62 | 0.22 | 4.75 |
| | 8514NI | 0.67 | 12.05 | 0.63 | 0.65 | 0 | 0 | 4.77 | 0.22 | 4.94 |
| | 64K | 0.59 | 12.06 | 0.62 | 0.65 | 0 | 0 | 4.98 | 0.22 | 5.21 |
| 1785S | VGA 480 | 0.75 | 12.07 | 0.65 | 0.65 | 0 | 0 | 4.54 | 0.32 | 4.66 |
| | 8514NI | 0.66 | 12.07 | 0.62 | 0.65 | 0 | 0 | 4.78 | 0.32 | 4.96 |
| | 80K | 0.58 | 12.06 | 0.65 | 0.65 | 0 | 0 | 5.23 | 0.32 | 5.5 |

| TR | | Q304 (2SC945) | | | Q305 (2SC945) | | | Q306 (2SA733) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | E | C | B | E | C | B |
| 1765S | VGA 480 | 0 | 4.53 | 0.22 | 4.6 | 26.16 | 4.64 | 4.6 | 0 | 4.64 |
| | SVGA II | 0 | 4.62 | 0.22 | 4.72 | 26.2 | 4.74 | 4.73 | 0 | 4.75 |
| | 8514NI | 0 | 4.77 | 0.22 | 4.81 | 26.24 | 4.94 | 4.81 | 0 | 4.94 |
| | 64K | 0 | 4.98 | 0.22 | 5.11 | 26.26 | 5.21 | 5.11 | 0 | 5.21 |
| 1785S | VGA 480 | 0 | 4.54 | 0.32 | 4.61 | 26.35 | 4.66 | 4.62 | 0 | 4.66 |
| | 8514NI | 0 | 4.78 | 0.32 | 4.9 | 26.41 | 4.95 | 4.9 | 0 | 4.95 |
| | 80K | 0 | 5.23 | 0.32 | 5.37 | 26.43 | 5.5 | 5.37 | 0 | 5.5 |

| TR | | Q307 (2SC945) | | | Q308 (2SA733) | | | Q309 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | B | C | E | B | C | E |
| 1765S | VGA 480 | 1.24 | 5.2 | 1.82 | 13.6 | 0.64 | 14.3 | 0.64 | 11.37 | 0.6 |
| | SVGA II | 1.27 | 5.08 | 1.85 | 13.74 | 0.64 | 14.5 | 0.64 | 11.37 | 0.06 |
| | 8514NI | 1.27 | 5.09 | 1.84 | 13.71 | 0.63 | 14.5 | 0.6 | 11.4 | 0.1 |
| | 64K | 1.26 | 5.14 | 1.82 | 13.68 | 0.61 | 14.46 | 0.61 | 11.73 | 0.08 |
| 1785S | VGA 480 | 1.1 | 5.9 | 1.7 | 13.1 | 0.6 | 13.8 | 0.6 | 11.4 | 0 |
| | 8514NI | 1.15 | 5.71 | 1.7 | 13.2 | 0.6 | 13.9 | 0.6 | 11.4 | 0.1 |
| | 80K | 1.13 | 5.81 | 1.7 | 13.1 | 0.6 | 13.9 | 0.6 | 11.6 | 0.06 |

| TR | | Q310 (2SC4256) | | | Q311 (2SC4256) | | | Q313 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | E | C | B | E | C | B |
| 1765S | VGA 480 | 11.36 | 270.8 | 12 | 352.4 | 845.4 | 270.8 | 1.23 | 3.63 | 1.82 |
| | SVGA II | 11.38 | 264.5 | 12 | 359.6 | 843.8 | 264.5 | 1.26 | 3.55 | 1.85 |
| | 8514NI | 11.4 | 259.9 | 12 | 359.6 | 843.7 | 259.8 | 1.26 | 3.55 | 1.84 |
| | 64K | 11.79 | 254 | 12 | 351.5 | 843.4 | 253.9 | 1.24 | 3.56 | 1.82 |
| 1785S | VGA 480 | 11.4 | 275.9 | 12 | 337.8 | 793.3 | 275.9 | 1.1 | 4.6 | 1.7 |
| | 8514NI | 11.4 | 266.1 | 12 | 346.4 | 792.3 | 266.1 | 1.1 | 4.3 | 1.7 |
| | 80K | 11.6 | 258.6 | 12 | 338.4 | 791.7 | 258.6 | 1.1 | 4.3 | 1.7 |

| TR | | Q314 (2SC4924) | | | Q316 (2SC945) | | | Q317 (2SA733) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | B | C | E | E | C | B |
| 1765S | VGA 480 | -0.69 | 60.44 | 0 | 10.8 | 26.16 | 10.18 | 7.68 | 0 | 10.18 |
| | SVGA II | -0.71 | 77.14 | 0 | 10.8 | 26.22 | 10.18 | 8.12 | 0 | 10.18 |
| | 8514NI | -0.73 | 75.2 | 0 | 10.8 | 26.24 | 10.15 | 7.9 | 0 | 10.2 |
| | 64K | -0.73 | 128.8 | 0 | 10.31 | 26.26 | 9.71 | 7.79 | 0 | 9.71 |
| 1785S | VGA 480 | 0.01 | 50.4 | 0 | 10.9 | 26.35 | 10.3 | 7.97 | 0 | 10.29 |
| | 8514NI | 0.01 | 82.4 | 0 | 10.87 | 26.41 | 10.26 | 8.09 | 0 | 10.26 |
| | 80K | 0.01 | 122.9 | 0 | 10.14 | 26.43 | 9.54 | 7.63 | 0 | 9.54 |

| TR | | Q318 (2SK941) | | | Q319 (K1377) | | | Q320 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | G | D | S | S | D | G | E | C | B |
| 1765S | VGA 480 | 4.6 | 19.17 | 0 | 60.13 | 179.54 | 63.86 | 0 | 15.11 | 0.04 |
| | SVGA II | 4.72 | 18.8 | 0 | 75.67 | 179.57 | 80.14 | 0 | 15.07 | 0.03 |
| | 8514NI | 4.83 | 17.87 | 0 | 95.22 | 179.54 | 100.5 | 0 | 0.02 | 0.62 |
| | 64K | 5.1 | 16.6 | 0 | 124.39 | 179.58 | 130.88 | 0 | 0.02 | 0.62 |
| 1785S | VGA 480 | 4.63 | 16.3 | 0 | 51.67 | 180.11 | 55.17 | 0 | 15.14 | 0.03 |
| | 8514NI | 4.91 | 14.6 | 0 | 80.4 | 180.06 | 85.14 | 0 | 15.04 | 0.03 |
| | 80K | 5.35 | 12.07 | 0 | 127.75 | 180.04 | 134.5 | 0 | 0 | 0.6 |

| TR | | Q321 (D669) | | | Q322 (2SC945) | | | Q323 (B649) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | E | C | B | E | C | B |
| 1765S | VGA 480 | 58.07 | 71.37 | 57.48 | 0 | 15.11 | 0.04 | 58.07 | 51.19 | 57.48 |
| | SVGA II | 73.51 | 87.43 | 72.92 | 0 | 0.03 | 0.62 | 73.51 | 66.36 | 72.92 |
| | 8514NI | 93.1 | 106.65 | 92.52 | 0 | 0.02 | 0.61 | 93.1 | 86.07 | 92.52 |
| | 64K | 122.43 | 135.5 | 121.88 | 0 | 0.02 | 0.61 | 122.43 | 115.59 | 121.88 |
| 1785S | VGA 480 | 51.2 | 59.2 | 51.7 | 0 | 15.14 | 0.03 | 51.2 | 39.2 | 51.7 |
| | 8514NI | 80.31 | 88.6 | 80.89 | 0 | 0.02 | 0.6 | 80.31 | 68.11 | 80.89 |
| | 80K | 128.2 | 135.9 | 128.9 | 0 | 0 | 0.6 | 128.2 | 116.8 | 128.9 |

| TR | | Q324 (IRF630) | | | Q325 (IRF630) | | | Q328 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | G | D | S | G | D | S | E | C | B |
| 1765S | VGA 480 | | | | 15.11 | 0 | 0 | 0 | 15.11 | 0.04 |
| | SVGA II | | | | 0.03 | 23.12 | 0 | 0 | 15.04 | 0.03 |
| | 8514NI | | | | 15.06 | 0 | 0 | 0 | 15.05 | 0.03 |
| | 64K | | | | 0.02 | 41.87 | 0 | 0 | 15.02 | 0.03 |
| 1785S | VGA 480 | 15.15 | 0.02 | 0 | 15.14 | 0.02 | 0 | 0 | 15.15 | 0.03 |
| | 8514NI | 0 | 29.34 | 0 | 0.02 | 29.34 | 0 | 0 | 0 | 0.61 |
| | 80K | 0 | 50.87 | 0 | 0.01 | 50.76 | 0 | 0 | 0 | 0.6 |

| TR | | Q329 (2SC945) | | | Q332 (2SC945) | | | Q333 (2SA733) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | E | C | B | E | C | B |
| 1765S | VGA 480 | 0 | 15.11 | 0.04 | 2.5 | 10.3 | 3.1 | 3.1 | 0 | 2.4 |
| | SVGA II | 0 | 0.03 | 0.62 | 2.48 | 10.35 | 3.06 | 3.06 | 0 | 2.44 |
| | 8514NI | 0 | 15.05 | 0.03 | 2.5 | 10.3 | 3.1 | 3.1 | 0 | 2.4 |
| | 64K | 0 | 0.02 | 0.66 | 2.48 | 10.32 | 3.05 | 3.05 | 0 | 2.44 |
| 1785S | VGA 480 | 0 | 15.14 | 0.03 | 2.5 | 10.5 | 3.1 | 3.1 | 0 | 2.4 |
| | 8514NI | 0 | 0.02 | 0.61 | 2.5 | 10.5 | 3.1 | 3.1 | 0 | 2.4 |
| | 80K | 0 | 0 | 0.6 | 2.5 | 10.4 | 3.1 | 3.1 | 0 | 2.4 |

| TR | | Q335 (2SC4769) | | | Q336 (2SC337) | | | Q338 (2SK1377) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | E | C | B | S | D | G |
| 1765S | VGA 480 | 124.2 | 177 | 124.5 | 0 | 11.8 | -1.88 | 0.03 | 124.01 | 2.73 |
| | SVGA II | 111.47 | 179.85 | 111.65 | 0 | 10.8 | -1.97 | 0.03 | 111.2 | 3.35 |
| | 8514NI | 88.1 | 175.3 | 88.3 | 0 | 9.6 | -2.14 | 0.03 | 88.02 | 4.46 |
| | 64K | 49.5 | 173.2 | 49.8 | 0 | 8.3 | -2.13 | 0.04 | 49.5 | 6.32 |
| 1785S | VGA 480 | 133.5 | 178.6 | 133.7 | 0 | 11.48 | -1.93 | 0.03 | 133.1 | 2.32 |
| | 8514NI | 104.3 | 177.7 | 104.5 | 0 | 9.37 | -2.11 | 0.03 | 104.08 | 3.7 |
| | 80K | 35.22 | 179.4 | 35.5 | 0 | 6.21 | -2.17 | 0.04 | 35.12 | 7.03 |

| TR | | Q339 (2SC945) | | | Q340 (2SC945) | | | Q341 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | B | C | E | B | C | E |
| 1765S | VGA 480 | 0 | 2231 | -0.11 | 0.03 | 24.38 | 0 | 22.3 | 26.24 | 21.96 |
| | SVGA II | 0 | 21.96 | -0.13 | 0.03 | 24.46 | 0 | 21.99 | 26.32 | 21.64 |
| | 8514NI | 0 | 21.35 | -0.16 | 0.03 | 24.46 | 0 | 21.34 | 26.31 | 21.03 |
| | 64K | 0 | 20.44 | -0.2 | 0.03 | 24.48 | 0 | 20.44 | 26.35 | 20.15 |
| 1785S | VGA 480 | 0 | 22.8 | -0.1 | 0.03 | 24.54 | 0 | 22.8 | 26.45 | 22.4 |
| | 8514NI | 0 | 21.96 | -0.15 | 0.03 | 24.6 | 0 | 21.96 | 26.51 | 21.63 |
| | 80K | 0 | 20.23 | -0.22 | 0.03 | 24.6 | 0 | 20.23 | 26.53 | 19.95 |

| TR | | Q342 (2SA733) | | | Q344 (2SA733) | | | Q345 (IRF630) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | B | C | E | G | D | S |
| 1765S | VGA 480 | 22.3 | 0 | 21.96 | 11.87 | 0 | 11.97 | 15.11 | 0 | 0 |
| | SVGA II | 21.99 | 0 | 21.65 | 11.87 | 0 | 11.97 | 15.04 | 0.05 | 0 |
| | 8514NI | 21.34 | 0 | 21.03 | 11.88 | 0 | 11.96 | 0.03 | 30.01 | 0 |
| | 64K | 20.44 | 0 | 20.15 | 11.88 | 0 | 11.96 | 0.02 | 41.97 | 0 |
| 1785S | VGA 480 | 22.8 | 0 | 22.4 | 11.88 | 0 | 12 | 15.15 | 0 | 0 |
| | 8514NI | 21.96 | 0 | 21.63 | 11.89 | 0 | 12 | 15.04 | 0.27 | 0 |
| | 80K | 20.23 | 0 | 19.95 | 11.9 | 0 | 12 | 0 | 50.83 | 0 |

| TR | | Q346 (IRF630) | | | Q348 (2SC2001) | | | Q350 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | G | D | S | E | C | B | E | C | B |
| 1765S | VGA 480 | 15.11 | 0 | 0 | 0 | 6.95 | -1.18 | 0 | 2.45 | 0 |
| | SVGA II | 0.03 | 22.9 | 0 | 0 | 6.85 | -1.32 | 0 | 2.32 | 0 |
| | 8514NI | 0.02 | 29.71 | 0 | 0 | 6.6 | -1.55 | 0 | 2.32 | 0 |
| | 64K | 0.02 | 41.62 | 0 | 0 | 6.26 | -1.77 | 0 | 2.32 | 0 |
| 1785S | VGA 480 | 15.15 | 0 | 0 | 0 | 6.76 | -1.62 | 0 | 2.55 | 0 |
| | 8514NI | 0.02 | 29.22 | 0 | 0 | 6.25 | -1.96 | 0 | 2.44 | 0 |
| | 80K | 0.01 | 50.65 | 0 | 0 | 5.47 | -2.17 | 0 | 2.31 | 0 |

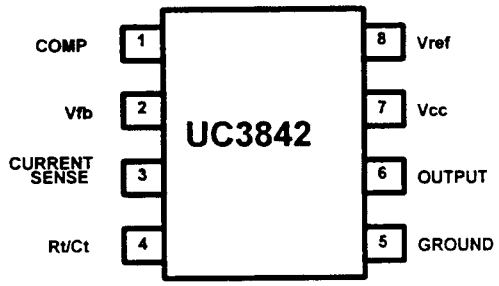
| TR | | Q351 (2SA733) | | | Q352 (2SC945) | | | Q353 (2SC945) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | E | C | B | B | C | E |
| 1765S | VGA 480 | 19.95 | 8.75 | 19.34 | 0 | 8.76 | 0 | 8.39 | 26.16 | 8.66 |
| | SVGA II | 20.01 | 8.15 | 19.4 | 0 | 8.15 | 0 | 10.54 | 26.21 | 10.87 |
| | 8514NI | 20.2 | 7.1 | 19.4 | 0 | 7.1 | 0 | 13.23 | 26.24 | 13.63 |
| | 64K | 20.05 | 5.52 | 19.44 | 0 | 5.52 | 0 | 17.23 | 26.26 | 17.66 |
| 1785S | VGA 480 | 20.14 | 9.32 | 19.53 | 0 | 9.32 | 0 | 7.24 | 26.35 | 7.54 |
| | 8514NI | 20.19 | 7.98 | 19.58 | 0 | 7.99 | 0 | 11.13 | 26.14 | 11.58 |
| | 80K | 20.23 | 5.33 | 19.62 | 0 | 5.34 | -0.02 | 17.55 | 26.43 | 18.04 |

| TR | | Q354 (2SA733) | | | Q401 (F483) | | | Q403 (2SC3675) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | B | C | E | E | C | B | B | C | E |
| 1765S | VGA 480 | 8.39 | 0 | 8.66 | -134.93 | -18.35 | -143.56 | 11.96 | 633.1 | 11.46 |
| | SVGA II | 10.54 | 0 | 10.87 | -134.41 | -19.05 | -143.07 | 11.97 | 633 | 11.5 |
| | 8514NI | 13.23 | 0 | 13.63 | -134 | -19.07 | -142.7 | 11.97 | 633 | 11.5 |
| | 64K | 17.22 | 0 | 17.66 | -134 | -19.78 | -142.68 | 11.98 | 632 | 11.5 |
| 1785S | VGA 480 | 7.24 | 0 | 7.54 | -138.2 | -18.8 | -146.8 | 12 | 570.2 | 11.5 |
| | 8514NI | 11.13 | 0 | 11.59 | -138.1 | -19.5 | -146.7 | 12 | 569.7 | 11.5 |
| | 80K | 17.55 | 0 | 18.04 | -138.1 | -20.86 | -146.7 | 12 | 568.2 | 11.5 |

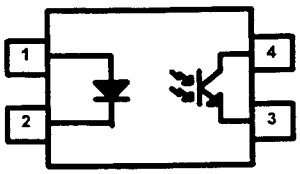
| TR | | Q404 (2SC945) | | | Q405 (2SC945) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIN / MODE / MODEL | | E | C | B | B | C | E | | | |
| 1765S | VGA 480 | 5.11 | 11.46 | 5.7 | 5.67 | 11.96 | 5.11 | | | |
| | SVGA II | 5.12 | 11.47 | 5.71 | 5.68 | 11.97 | 5.11 | | | |
| | 8514NI | 5.12 | 11.47 | 5.7 | 5.67 | 11.96 | 5.12 | | | |
| | 64K | 5.13 | 11.49 | 5.71 | 5.67 | 11.96 | 5.12 | | | |
| 1785S | VGA 480 | 5.1 | 11.5 | 5.7 | 5.65 | 12 | 5.09 | | | |
| | 8514NI | 5.1 | 11.5 | 5.7 | 5.65 | 12 | 5.09 | | | |
| | 80K | 5.1 | 11.5 | 5.7 | 5.65 | 12 | 5.1 | | | |

# 7.0 IC CONFIGURATION

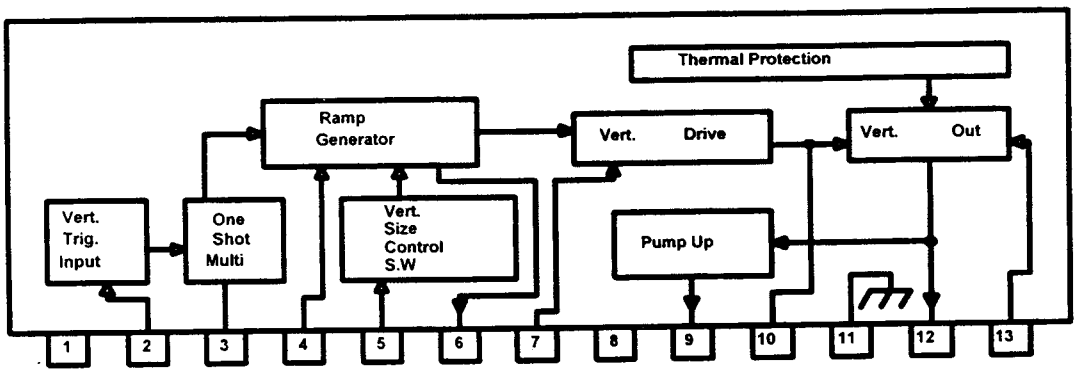
## (1) 3842,3843 (IC101,IC303)



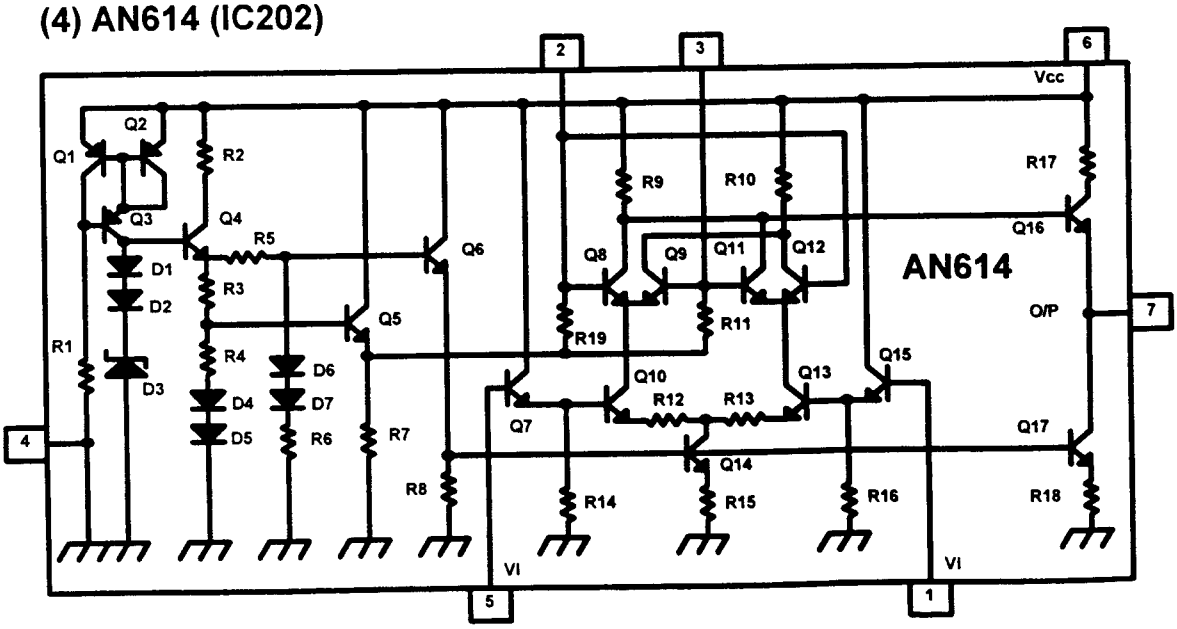

## (2) 2561 (IC102)



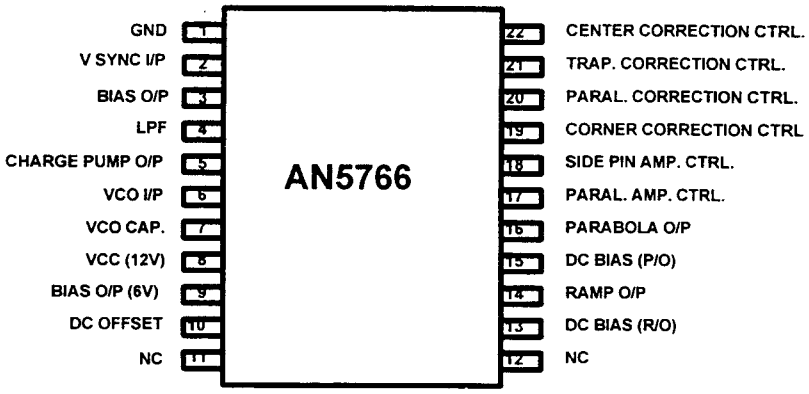

## (3) LA7838 (IC201)



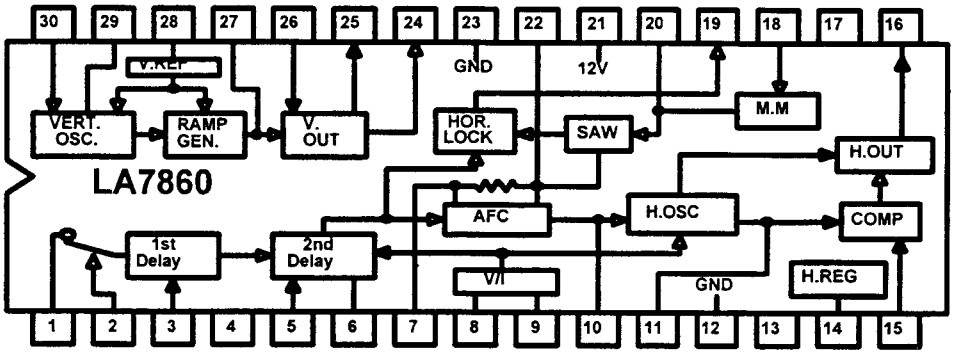

## (4) AN614 (IC202)



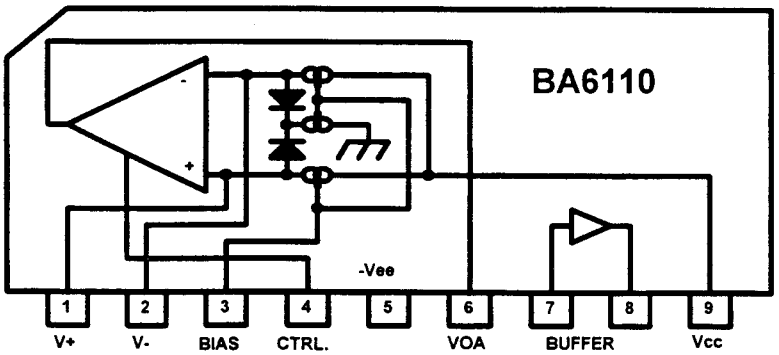
## (5) AN5766 (IC204)



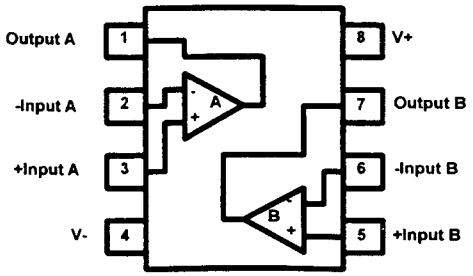

## (6) LA7860 (IC301)



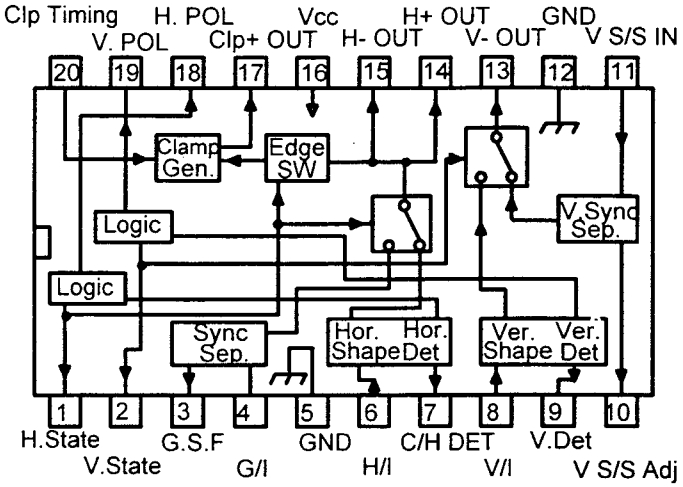

## (7) BA6110 (IC304)



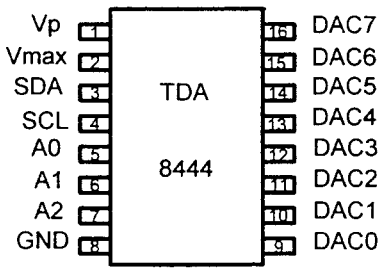

## (8) LM358,2903D (IC306,IC307)



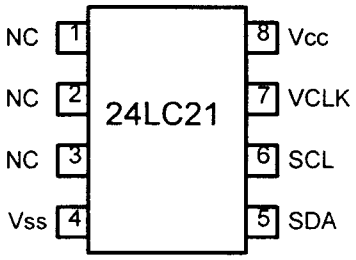
## (9) M52346SP (IC507)



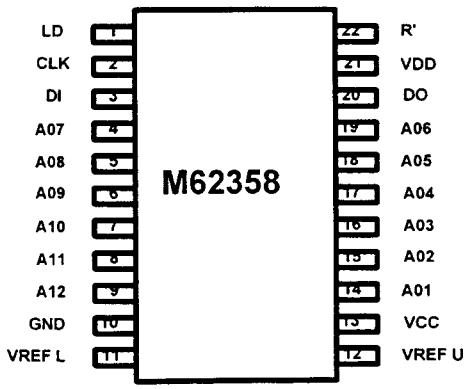

## (10) TDA8444 (IC603)



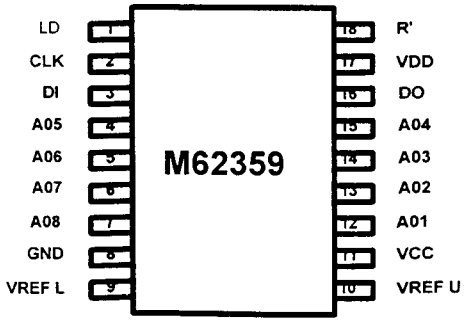

## (11) 24LC21 (IC602)



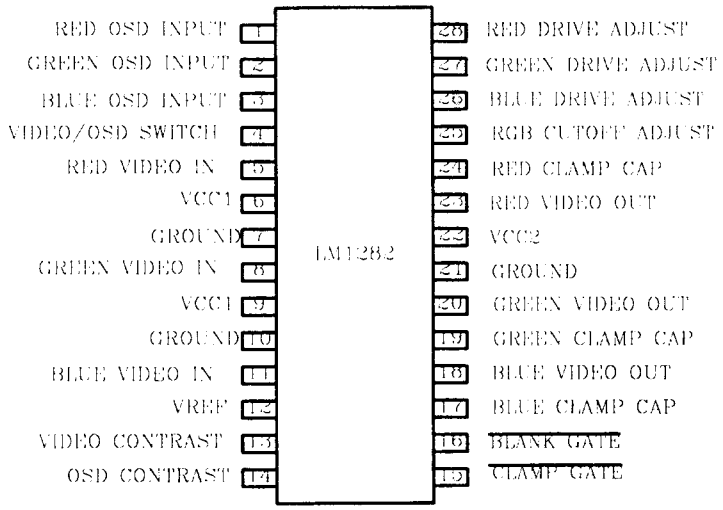

## (12) M62358 (IC506)



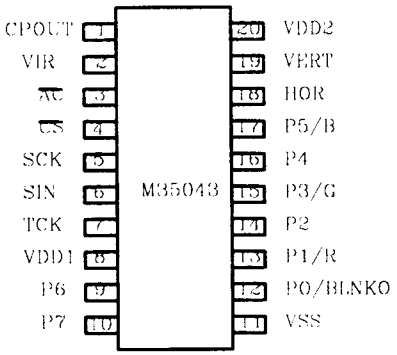

## (13) M62359 (IC604)



## (14) IC601 (LM1282)




## (15) IC603 (M35043)




# 8.0 LAYOUT FOR MAIN COMPONENTS AND ADJUSTED

# 9.0 CIRCUIT DIAGRAM

# 10.0 RECOMMANDED SPARE PARTS LIST

| MAIN BOARD REV.A | | | | | | |
|---|---|---|---|---|---|---|
| ITEM | PRIORITY | NEW PARTS | PART NO. | DESCRIPTION | LOCATION | REMARK |
| 1 | | | 15D68-F000 | PBL406 | BD101 | |
| 2 | | | 28CD7-2217 | 220 $\mu$ F 400V | C106 | |
| 3 | | | 15S33T201F | RGP10D | D102 | |
| 4 | | | 15S49T200F | BYV26E | D103 | |
| 5 | ◎ | | 15S11M001F | 1N4148 | D204,D344 | |
| 6 | | | 15S3C-702F | DD54RC | D319 | |
| 7 | | | 15S47T201F | BYV26C | D320 | |
| 8 | | | 15S65M201F | 1N4004 | D323 | |
| 9 | | | 15S3LM100F | RGP02 | D328 | |
| 10 | | | 15S35T201F | RGP10G/BYD33G | D333 | |
| 11 | ● | | 49FB2-0A0B | FUSE 3.15A 250V | F101 | |
| 12 | ● | | 17A06-150H | 3842 | IC101 | |
| 13 | | | 17B21-090B | PS2561 | IC102 | |
| 14 | | | 17A06-130H | LA7838 | IC201 | |
| 15 | | | 17A11-090H | AN614 | IC202 | |
| 16 | | | 17A06-220H | AN5766 | IC204 | |
| 17 | ◎ | | 17A06-240H | LA7860 | IC301 | |
| 18 | ◎ | | 17A06-190H | 3843 | IC303 | |
| 19 | | | 17A12-070H | BA6110 | IC304 | |
| 20 | ◎ | | 17A07-031H | TL431 | IC305 | |
| 21 | ◎ | | 17A11-040H | LM358 | IC306 | |
| 22 | | | 17A11-030H | 2903 | IC307 | |
| 23 | ◎ | | 17A07-100H | LM317 | IC310 | |
| 24 | | | 16M08-005R | AT24C04 EEPROM | IC502 | |
| 25 | | | 16P40-011W | 80C52 | IC503 | |
| 26 | | | 17A07-171H | 5002LH | IC504 | |
| 27 | | | 17A23-003H | M62358P | IC506 | |
| 28 | | | 17A01-020H | M52346SP | IC507 | |
| 29 | ● | | 14K3P-040S | 2SK955 | Q102 | |
| 30 | | | 14A92-141E | BF488 | Q107 | |
| 31 | ◎ | | 14C92-111B | 2SC945 | Q201,Q301 | |
| 32 | | | 14B26-030B | 2SB772 | Q204 | |
| 33 | | | 14B92-011P | 2SB562 | Q213 | |
| 34 | ◎ | | 14A92-021B | 2SA733 | Q219 | |
| 35 | | | 14A92-071B | 2SA952 | Q220 | |

※ Remark: ● : 1st priority , Recommanded Q'ty=(Location Number) x3
◎ : 2nd priority , Recommanded Q'ty=(Location Number) x2

| MAIN BOARD REV.A | | | | | | |
|---|---|---|---|---|---|---|
| ITEM | PRIORITY | NEW PARTS | PART NO. | DESCRIPTION | LOCATION | REMARK |
| 36 | | | 14C22-230C | 2SC4256 | Q310 | |
| 37 | ● | | 14C3P-150C | 2SC4924 | Q314 | |
| 38 | ◎ | | 14K93-021P | 2SK941 | Q318 | |
| 39 | ◎ | | 14K22-210A | 2SK1377 | Q319 | |
| 40 | | | 14D17-010P | 2SD669A | Q321 | |
| 41 | | | 14B17-010P | 2SB649A | Q323 | |
| 42 | ● | | 14K22-110W | IRF630/890 | Q325,Q346 | |
| 43 | ● | | 14C3P-080C | 2SC4769 | Q335 | |
| 44 | | V | 14C92-311E | JC337 | Q336 | |
| 45 | | V | 14K22-180Y | IRF640 | Q345 | |
| 46 | | | 14C92-101B | 2SC2001k | Q348 | |
| 47 | | | 14C92-201E | BF483 | Q401 | |
| 48 | | | 14C92-220C | 2SC3675 | Q403 | |
| 49 | ● | | 23755-2284 | 0.22R 2W | R106 | |
| 50 | ● | | 49FRA-001M | FUSE RES 1R 1/4W | R380 | |
| 51 | | | 14T92-011E | BT169D | SCR101 | |
| 52 | | | 47S00-0670 | X'FMR | T101 | |
| 53 | | | 47D10-0151 | X'FMR | T302 | |
| 54 | | V | 47F13-0530 | FBT | T402 | |

| VIDEO BOARD REV.A | | | | | | |
|---|---|---|---|---|---|---|
| ITEM | PRIORITY | NEW PARTS | PART NO. | DESCRIPTION | LOCATION | REMARK |
| 1 | | | 15S11M001F | 1N4148 | D606 | |
| 2 | | | 15S43M001F | BAV21 | D607 | |
| 3 | | | 15Z33M9190 | ZENER DIODE 9.1V | ZD601 | |
| 4 | ● | V | 17A04-130H | LM1282 | IC601 | |
| 5 | ◎ | | 16M08-007R | AT24LC21 EEPROM | IC602 | |
| 6 | | V | 16N20-002U | M35043 | IC603 | |
| 7 | | | 17A23-002H | M62359P | IC604 | |
| 8 | ◎ | | 14C26-170E | BFQ232 | Q602 | |
| 9 | ● | | 14C26-180E | BFQ252 | Q603 | |
| 10 | ● | | 14C26-110E | BFQ262 | Q604 | |
| 11 | | | 14C92-281P | 2SC1906 | Q605 | |
| 12 | ◎ | | 14C26-120P | BFQ162 | Q606 | |
| 13 | ◎ | | 14C92-111B | 2SC945 | Q619 | |
| 14 | ◎ | | 14A92-141E | BF488 | Q620 | |
| 15 | | | 14C92-201E | BF483 | Q621 | |
| 16 | | | 23765-2715 | 270R 3W | R622 | |

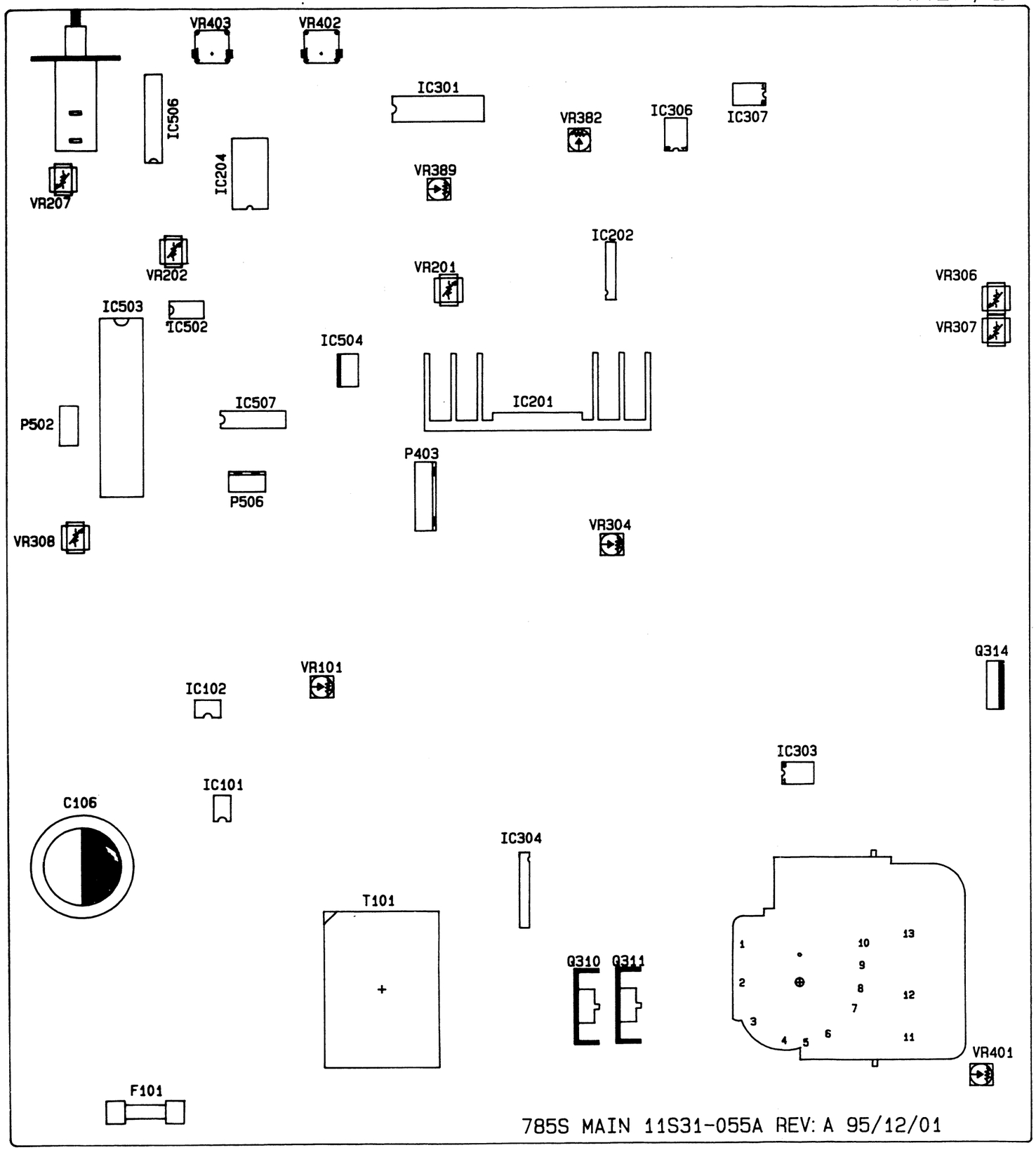
# 11.0 CRT CONTRAST LIST

The 1765S/1785S have many kinds of CRT.
The different parts between them have been shown in follow.

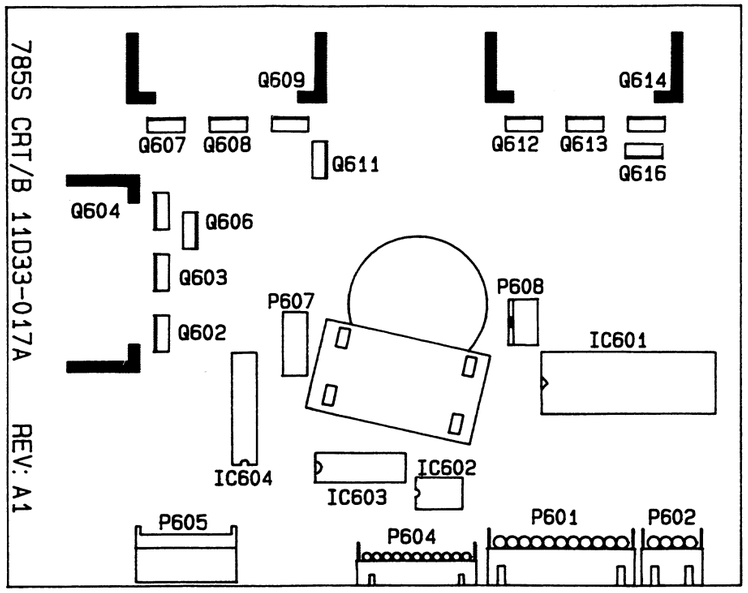
| MODEL | 1765S | | 1785S | | |
|---|---|---|---|---|---|
| CRT VENDOR | **PANASONIC** | **SAMSUNG** | **HITACHI** | **TOSHIBA** | PANASONIC |
| PART NO. | 20H17-11AB | 20H17-27AA | 20H17-23AC | 20H17-197A | 20H17-11CA |
| PART NAME | M41KXH100X01 (J) | M41KUK36X15 | M41KKL180X14 (U) | M41LDL27XX17 (FV1D3) | M41KXH147X02 |
| C322 | 0.3 μ 400V 35155A3046 | 0.33 μ 400V 35155A3346 | 0.22 μ 400V 35155A2246 | 0.22 μ 400V 35155A2246 | 0.25 μ 400V 35155A2546 |
| C367 | 0.1 μ 400V 35155-1046 | 0.15 μ 400V 35155-1547 | 0.15 μ 400V 35155-1547 | 0.15 μ 400V 35155-1547 | 0.15 μ 400V 35155-1547 |
| C371 | 0.27 μ 400V 35155-2747 | 0.39 μ 400V 35155-3947 | 0.22 μ 400V 35155-2247 | 0.22 μ 400V 35155-2247 | 0.33 μ 400V 35155-3347 |
| C365 | 0.68 μ 400V 35155-684C | 0.82 μ 400V 35155-824C | 0.47 μ 400V 35155-474C | 0.47 μ 400V 35155-474C | 0.56 μ 400V 35155-564C |
| C369 | OPEN | OPEN | 0.68 μ 250V 35145-6847 | 0.68 μ 250V 35145-6847 | 0.82 μ 250V 35145-8247 |
| L305 | 46L00-0500 | 46L00-0460 | 46L00-0460 | 46L00-0460 | 46L00-0460 |
| R377 | 7.5K 1/8W 22215-752M | 7.5K 1/8W 22215-752M | 6.2K 1/8W 22215-622M | 6.5K 1/8W 22215-652M | 6.5K 1/8W 22215-652M |
| R356 | 2.2 Ω/3W 23765-2295 | 1 Ω 3W 23765-1095 | 1 Ω 3W 23765-1095 | 1 Ω 3W 23765-1095 | 1 Ω 3W 23765-1095 |
| R476 | 16K 1/8W 23A11-163M | 16K 1/8W 23A11-163M | 10K 1/8W 23A11-103M | 10K 1/8W 23A11-103M | 10K 1/8W 23A11-103M |
| R427 | 13K 1/8W 22215-133M | 20K 1/8W 22215-203M | 27K 1/8W 22215-273M | 24K 1/8W 22215-243M | 18K 1/8W 22215-183M |
| FBT | 47F13-0530 | 47F13-0530 | 47F13-0550 | 47F13-0590 | 47F13-0590 |
| R675 | 1.5 Ω 3W 23765-1595 | 1.5 Ω 3W 23765-1595 | 0.68 Ω 1W 23245-6884 | 1 Ω 2W 23755-1094 | 1.2 Ω 2W 23255-1295 |
| ZD404 | 12V 15Z33M1200 | 24V 15Z33M2400 | 24V 15Z33M2400 | 24V 15Z33M2400 | 24V 15Z33M2400 |
| C386 | 2200P 2KV 375B5-2227 | 1800P 2KV 375B5-1827 | 1800P 2KV 375B5-1827 | 1800P 2KV 375B5-1827 | 1800P 2KV 375B5-1827 |
| D504 | 1N4148 15S11M001F | 1N4148 15S11M001F | OPEN | OPEN | OPEN |
| J101 | 5mm 54J05-050B | 5mm 54J05-050B | OPEN | OPEN | OPEN |
| J121 | 7.5mm 54J05-075B | 7.5mm 54J05-075B | 7.5mm 54J05-075B | OPEN | OPEN |
| R453 | 1 Ω 1/4W 23225-109M | 1 Ω 1/4W 23225-109M | 1 Ω 1/4W 23225-109M | OPEN | OPEN |

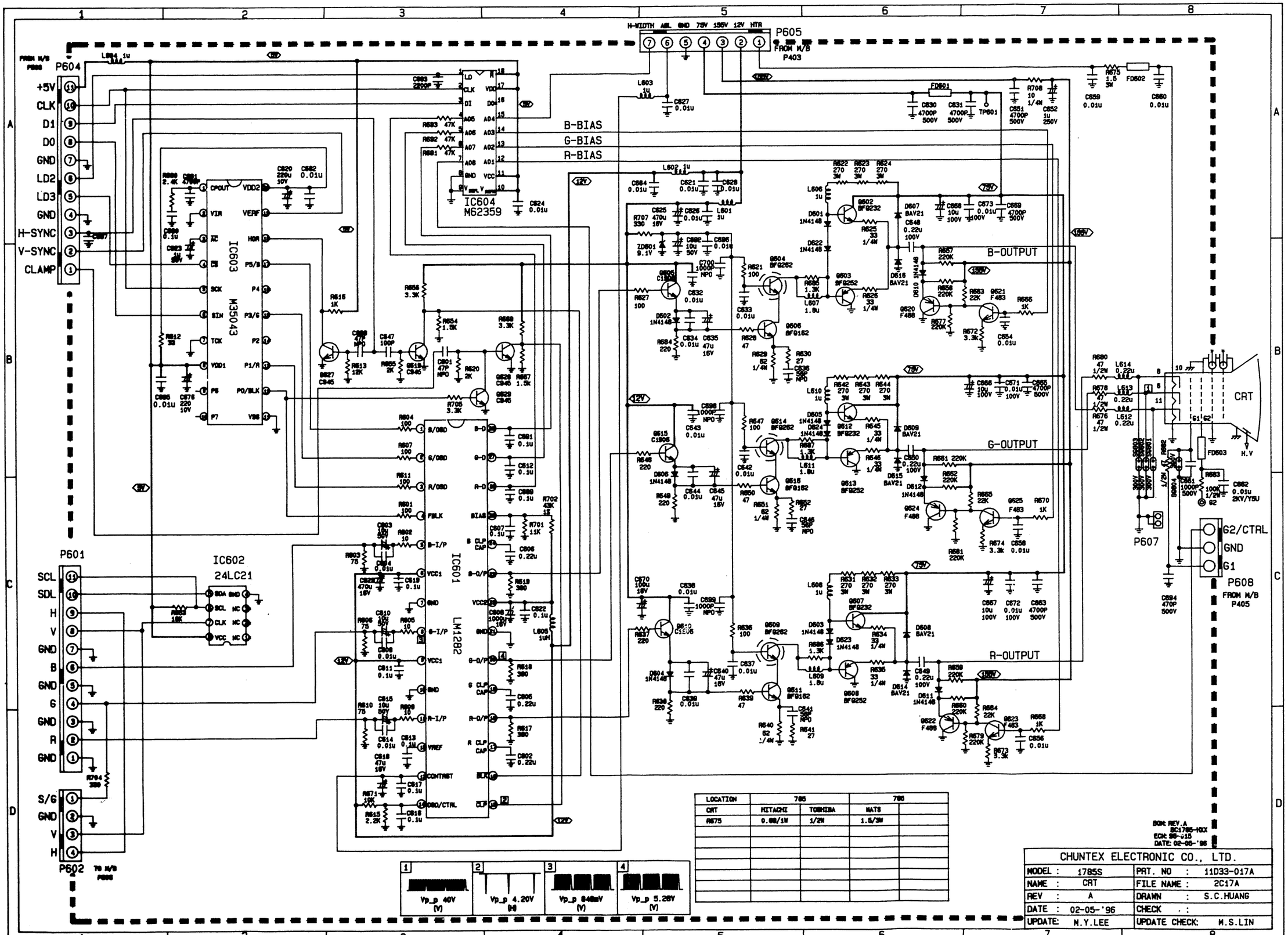
| MODEL | 1765S | | 1785S | | |
|---|---|---|---|---|---|
| CRT VENDOR | **PANASONIC** | **SAMSUNG** | **HITACHI** | **TOSHIBA** | PANASONIC |
| PART NO. | 20H17-11AB | 20H17-27AA | 20H17-23AC | 20H17-197A | 20H17-11CA |
| PART NAME | M41KXH100X01 (J) | M41KUK36X15 | M41KKL180X14 (U) | M41LDL27XX17 (FV1D3) | M41KXH147X02 |
| R461 | OPEN | OPEN | OPEN | 1 Ω 1/4W 23225-109M | 1 Ω 1/4W 23225-109M |
| R428 | 4.7K 1/8W 22215-472M | 4.7K 1/8W 22215-472M | 4.7K 1/8W 22215-472M | 5.6K 1/8W 22215-562M | 5.6K 1/8W 22215-562M |
| R407 | 330K 1/4W 22225-334M | 330K 1/4W 22225-334M | 330K 1/4W 22225-334M | 150K 1/4W 22225-154M | 470K 1/4W 22225-474M |
| R485 | 330K 1/4W 22225-334M | 330K 1/4W 22225-334M | 330K 1/4W 22225-334M | 150K 1/4W 22225-154M | 470K 1/4W 22225-474M |
| R421 | 150K 1/8W 22215-154M | 150K 1/8W 22215-154M | 150K 1/8W 22215-154M | OPEN | OPEN |
| R434 | 20K 1/8W 22215-203M | 20K 1/8W 22215-203M | 20K 1/8W 22215-203M | 2.7K 1/8W 22215-272M | 8.2K 1/8W 22215-822M |
| R483 | 39K 1/8W 22215-393M | 39K 1/8W 22215-393M | 39K 1/8W 22215-393M | 10K 1/8W 22215-103M | 20K 1/8W 22215-203M |
| R208 | 150 Ω 1W 23245-1514 | 150 Ω 1W 23245-1514 | 150 Ω 1W 23245-1514 | 180 Ω 1W 23245-1814 | 180 Ω 1W 23245-1814 |
| CANCFLLING COIL | OPEN | OPEN | 65W33562D0 | OPEN | OPEN |
| Q324 | OPEN | OPEN | IRF640 14K22-180Y | IRF40 14K22-180Y | IRF640 14K22-180Y |
| DEGAUSSING | 46G00-0069 | 46G00-0069 | 46G00-0069 | 46G00-0083 | 46G00-0069 |
| R257 | 3.3K 1/8W 22215-332M | 10K 1/8W 22215-103M | 3.3K 1/8W 22215-332M | 3.3K 1/8W 22215-332M | 3.3K 1/8W 22215-332M |
| J170 | 7.5mm 54J05-075B | 7.5mm 54J05-075B | OPEN | 7.5mm 54J05-075B | 7.5mm 54J05-075B |
| R450 | 7.5mm 54J05-075B | 7.5mm 54J05-075B | OPEN | 7.5mm 54J05-075B | 7.5mm 54J05-075B |
| R490 | 910 Ω 1/8W 22215-911M | 910 Ω 1/8W 22215-911M | 1K 1/8W 22215-102M | 1K 1/8W 22215-102M | 910 Ω 1/8W 22215-911M |
| P402 | OPEN | OPEN | 64B33-0010 | OPEN | OPEN |
| R253 | 8.2K 1/8W 22215-822M | 8.2K 1/8W 22215-822M | 8.2K 1/8W 22215-822M | 8.2K 1/8W 22215-822M | 6.8K 1/8W 22215-682M |
| R256 | 1K 1/8W 22215-102M | 1K 1/8W 22215-102M | 1K 1/8W 22215-102M | 1K 1/8W 22215-102M | 510 Ω 1/8W 22215-511M |
| Q325 | IRF630/890 14K22-110W | IRF630/890 14K22-110W | IRF630/890 14K22-110W | IRF630/890 14K22-110W | IRF640 14K22-180Y |

MAIN/B


VR403
VR402
IC301
IC506
VR382
IC306
IC307
IC204
VR389
VR207
IC202
VR202
VR201
VR306
IC503
IC502
VR307
IC504
IC201
IC507
P502
P403
P506
VR308
VR304
VR101
IC102
Q314
IC303
IC101
C106
IC304
T101
Q310
Q311
VR401
F101
785S MAIN 11S31-055A REV: A 95/12/01

CRT/B


785S CRT/B 11D33-017A REV: A1
Q609
Q614
Q607
Q608
Q611
Q612
Q613
Q616
Q604
Q606
Q603
Q602
P607
P608
IC601
IC604
IC602
IC603
P605
P604
P601
P602




| LOCATION | 78S | | 78S | |
|---|---|---|---|---|
| CRT | HITACHI | TOSHIBA | MATS | |
| R675 | 0.68/1W | 1/2W | 1.5/3W | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Vp_p 1.78V 27.17KHZ | 2 Vp_p 14.8V 27.17KHZ | 3 Vp_p 564V (V) | 4 Vp_p 282V 27.17KHZ | 5 Vp_p 980mV (H) | 6 Vp_p 1.07V (V) | 7 Vp_p 752mV (V) | 8 Vp_p 596mV (H) | 9 Vp_p 690V (H) | 10 Vp_p 4.02V (H) | 11 Vp_p 17.7V (H) | 12 Vp_p 7.88V (H) | 13 Vp_p 7.52V (H) | |
| 25 Vp_p 5.84V (V) | 26 Vp_p 1.70V (V) | 27 Vp_p 2.98V (V) | 28 Vp_p 1.36V (V) | 29 Vp_p 4.24V (V) | 30 Vp_p 4.18V (V) | 31 Vp_p 11.0V (H) | 32 Vp_p 2.12V (H) | 33 Vp_p 2.48V (H) | 34 Vp_p 10.0V (H) | 35 Vp_p 2.46V (H) | 36 Vp_p 2.24V (H) | 37 Vp_p 4.84V 10.1236MHZ | |

1 2 3 4

A B C D E

J101 P502 J3 J2 J1 T1 RXD TXD GND

J1: FACTORY PRESET
J2: PWR SAVING DISABLE
J3: SHORT 70K OPEN 85K

IC503 80C52 Vcc INT0(VD) INT1 T0(HD) T1 Vpo1 Hpo1 RXD TXD P0.0 MUTE CLK DI DO DE LD1 DEGA EX ALE PSEN P2.7 P2.6 P2.5 P2.4 P2.3 P2.2 P2.1 P2.0 P1.0 P1.1 P1.2 P1.3 P1.4 P1.5 P1.6 P1.7 GND Reset X1 X2 Y501 12MHZ

IC502 24C04

IC506 M62358 Vcc Vref1 R A01 Y-C VDD A02 PIN LD A03 H-F/V CLK A04 H-PHASE DI A05 K.S DO A06 BAL Vref2 A07 PC GND A08 TILT A09 ROT A010 CNTRST A011 V-S A012 V-F/V

IC505 TL431

IC201 HAMP GEN THERMAL PROTECT VERT DRIVE VERT O/P PUMP UP Vert. Trig. Input One Shot Multi Vert Size SW.

IC202 AN614

IC204 AN5766 KS TILT PC PIN NON-SYM PIN

IC507 M52346SP S/C EH EV HC S/G GND HS PHC VS PVC V H Vcc

IC301 LA7860 1st Delay 2nd Delay V.REF V.OSC RAMP V OUT V.BLK H.LOCK SAW H.W H.OUT COMP AFC H.OSC V/I H.REF

IC101 SG3842

IC102 PS2561

IC103 TL431

P503 TO CRT/B P634

P506 TO CRT/B P632 S/G GND V H

P501 TO KEY/B P901

P305 TO LED G-LED GND Y-LED

P101

F101 3.15A

SW101

BD101 PBL405

NTC101 SCK-055 FD101

PTC101

AL101

T101

T303 EI-22

T304 0322 RGP100

T305

IC307 29030

※ ZD101 is use for Korea only ,other areas replaced by jumper

H-WIDTH

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | Vp_p 7.88V (H) | 13 | Vp_p 7.52V (H) | 14 | Vp_p 9.9V (H) | 15 | Vp_p 11.9V (H) | 16 | Vp_p 199V (H) | 17 | Vp_p 1.[illegible]08KV (H) | 18 | Vp_p 7.84V (H) | 19 | Vp_p 1.90V (V) | 20 | Vp_p 448mV (V) | 21 | Vp_p 2.42V (V) | 22 | Vp_p 27.2V (H) | 23 | Vp_p 44.8V (V) | 24 | Vp_p 2.12V (V) |
| 36 | Vp_p 2.24V (H) | 37 | Vp_p 4.84V 10.1236MHZ | 38 | Vp_p 2.04V (H) | 39 | Vp_p 4.68V (H) | 40 | Vp_p 2.09V (V) | 41 | Vp_p 3.68V (H) | 42 | Vp_p 2.02V (V) | | | | | | | | | | | |

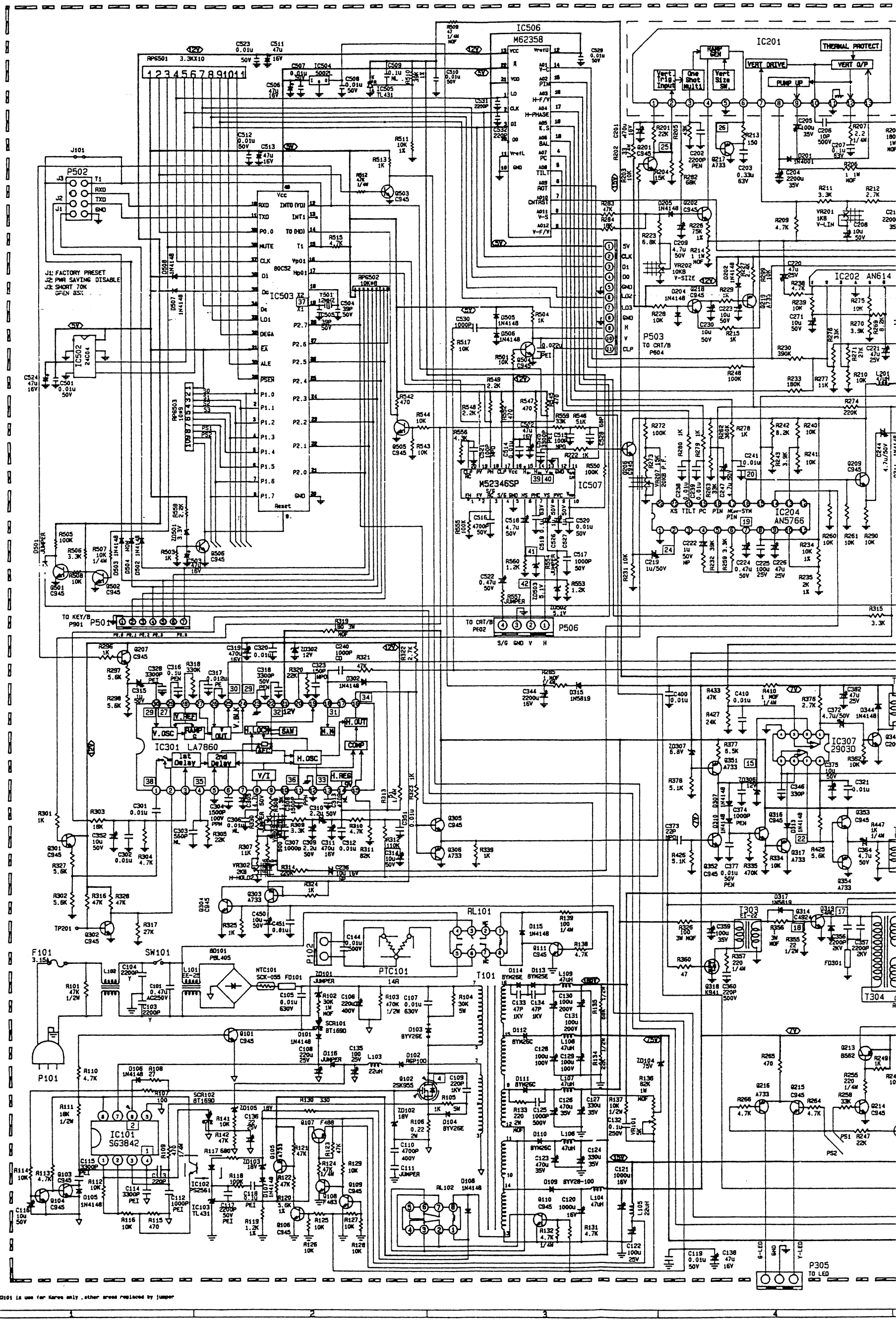
| MODEL / STN | 1785S | | 1765S | |
|---|---|---|---|---|
| CRT | HITACHI | TOSHIBA | PANASONIC | SAMSUNG |
| C322 | .22/400V | .22/400V | .3/400V | .33/400V |
| C365 | .47/250V | .47/250V | .68/400V | .82/400V |
| C367 | .15/400V | .15/400V | .1/400V | .15/400V |
| C369 | .68/250V | .68/250V | OPEN | OPEN |
| C371 | .22/400V | .22/400V | .27/400V | .39/400V |
| C386 | 1800P 2KV | 1800P 2KV | 2200P 2KV | 1800P 2KV |
| D504 | OPEN | OPEN | 1N4148 | 1N4148 |
| J101 | OPEN | OPEN | 5mm | 5mm |
| J121 | 7.5mm | OPEN | 7.5mm | 7.5mm |
| J170 | OPEN | 7.5mm | 7.5mm | 7.5mm |
| L305 | -0460 | -0460 | -0500 | -0460 |
| Q324 | IRF630 | IRF630 | OPEN | OPEN |
| R208 | 150 1W | 180 1W | 150 1W | 150 1W |
| R257 | 3.3K | 3.3K | 3.3K | 10K |
| R356 | 1 3W | 1 3W | 2.2 3W | 1 3W |
| R377 | 6.2K | 6.5K | 7.5K | 7.5K |
| R407 | 330K 1/4W | 150K 1/4W | 330K 1/4W | 330K 1/4W |
| R421 | 150K | OPME | 150K | 150K |
| R427 | 27K | 24K | 13K | 20K |
| R428 | 4.7K | 5.6K | 4.7K | 4.7K |
| R434 | 20K | 2.7K | 20K | 20K |
| R450 | OPEN | 7.5mm | 7.5mm | 7.5mm |
| R453 | 1 1/4W | OPEN | 1 1/4W | 1 1/4W |
| R461 | OPEN | 1 1/4W | OPEN | OPEN |
| R467 | 39K | 68K | 39K | 39K |
| R476 | 10K | 10K | 15K | 15K |
| R483 | 39K | 10K | 39K | 39K |
| R485 | 330K 1/4W | 150K 1/4W | 330K 1/4W | 330K 1/4W |
| R490 | 1K | 1.1K | 910 | 910 |
| R675 | .68 1W | 1 2W | 1.5 3W | 1.5 3W |
| T402 | -0550 | -0590 | -0530 | -0530 |
| ZD404 | 24V | 24V | 12V | 24V |
| P402 | .33-0010 | OPEN | OPEN | OPEN |
| C.COIL | .3356200 | OPEN | OPEN | OPEN |
| DEGAUSS | -0069 | -0083 | -0069 | -0069 |

| | |
|---|---|
| CHUNTEX ELECTRONIC CO., LTD. | |
| MODEL : 1785S (TOSHIBA) | PRT. NO : 11S31-055A |
| NAME : MAIN/B | FILE NAME : M55A |
| REV : A | DRAWN : H.H.WANG |
| DATE : 02/08/1996 | CHECK : |
| UPDATE: JEAN | UPDATE CHECK: M.S.LIN |

BOM REV.B
AC1765-HXX

11S31-055A REV: A

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Vp_p 1.78V 27.17KHZ | 2 Vp_p 14.9V 27.17KHZ | 3 Vp_p 564V (V) | 4 Vp_p 262V 27.17KHZ | 5 Vp_p 960mV (H) | 6 Vp_p 1.07V (V) | 7 Vp_p 752mV (V) | 8 Vp_p 596mV (H) | 9 Vp_p 690mV (H) | 10 Vp_p 4.02V (H) | 11 Vp_p 17.7V (H) | 12 Vp_p 7.88V (H) | 13 Vp_p |
| 25 Vp_p 5.84V (V) | 26 Vp_p 1.70V (V) | 27 Vp_p 2.96V (V) | 28 Vp_p 1.36V (V) | 29 Vp_p 4.24V (V) | 30 Vp_p 4.18V (V) | 31 Vp_p 11.0V (H) | 32 Vp_p 2.12V (H) | 33 Vp_p 2.48V (H) | 34 Vp_p 10.0V (H) | 35 Vp_p 2.46V (H) | 36 Vp_p 2.24V (H) | 37 Vp_p 10. |



| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | | | | | | | | |
| | Vp_p 17.7V (H) | Vp_p 7.88V (H) | Vp_p 7.52V (H) | Vp_p 9.9V (H) | Vp_p 11.9V (H) | Vp_p 199V (H) | Vp_p 1.108KV (H) | Vp_p 7.84V (H) | Vp_p 1.90V (V) | Vp_p 448mV (V) | Vp_p 2.42V (V) | Vp_p 27.2V (H) | Vp_p 44.8V (V) | Vp_p 2.12V (V) | | | | | | | | | |
| | 36 | 37 | 38 | 39 | 40 | 41 | 42 | | | | | | | | | | | | | | | | |
| | Vp_p 2.46V (H) | Vp_p 2.24V (H) | Vp_p 4.84V 10.1236MHZ | Vp_p 2.04V (H) | Vp_p 4.68V (H) | Vp_p 2.09V (V) | Vp_p 3.68V (H) | Vp_p 2.02V (V) | | | | | | | | | | | | | | | |

| MODEL / SYM | 1785S | | 1765S | |
|---|---|---|---|---|
| | CRT | HITACHI | TOSHIBA | PANASONIC | SAMSUNG |
| C322 | .22/400V | .22/400V | .3/400V | .33/400V |
| C365 | .47/250V | .47/250V | .68/400V | .82/400V |
| C367 | .15/400V | .15/400V | .1/400V | .15/400V |
| C369 | .68/250V | .68/250V | OPEN | OPEN |
| C371 | .22/400V | .22/400V | .27/400V | .39/400V |
| C386 | 1800P 2KV | 1800P 2KV | 2200P 2KV | 1800P 2KV |
| D504 | OPEN | OPEN | 1N4148 | 1N4148 |
| J101 | OPEN | OPEN | 5mm | 5mm |
| J121 | 7.5mm | OPEN | 7.5mm | 7.5mm |
| J170 | OPEN | 7.5mm | 7.5mm | 7.5mm |
| L305 | -0460 | -0460 | -0500 | -0460 |
| Q324 | IRF640 | IRF640 | OPEN | OPEN |
| R208 | 150 1W | 180 1W | 150 1W | 150 1W |
| R257 | 3.3K | 3.3K | 3.3K | 10K |
| R356 | 1 3W | 1 3W | 2.2 3W | 1 3W |
| R377 | 6.2K | 6.5K | 7.5K | 7.5K |
| R407 | 330K 1/4W | 150K 1/4W | 330K 1/4W | 330K 1/4W |
| R421 | 150K | OPNE | 150K | 150K |
| R427 | 27K | 24K | 13K | 20K |
| R428 | 4.7K | 5.6K | 4.7K | 4.7K |
| R434 | 20K | 2.7K | 20K | 20K |
| R450 | OPEN | 7.5mm | 7.5mm | 7.5mm |
| R453 | 1 1/4W | OPEN | 1 1/4W | 1 1/4W |
| R461 | OPEN | 1 1/4W | OPEN | OPEN |
| R467 | 39K | 39K | 39K | 39K |
| R476 | 10K | 10K | 16K | 16K |
| R483 | 39K | 10K | 39K | 39K |
| R485 | 330K 1/4W | 150K 1/4W | 330K 1/4W | 330K 1/4W |
| R490 | 1K | 1.1K | 910 | 910 |
| R675 | .68 1W | 1 2W | 1.5 3W | 1.5 3W |
| T402 | -0550 | -0590 | -0530 | -0530 |
| ZD404 | 24V | 24V | 12V | 24V |
| P402 | .33-0010 | OPEN | OPEN | OPEN |
| C.COIL | .3356200 | OPEN | OPEN | OPEN |
| DEGAUSS | -0069 | -0083 | -0069 | -0069 |

| SYM / MODEL | 1785S | | | |
|---|---|---|---|---|
| | CRT | PANASONIC | CRT | PANASONIC |
| C322 | 0.25u/400V | R461 | 1R | |
| C365 | 0.56u/400V | R483 | 20K | |
| C367 | 0.15u/400V | R485 | 330K 1/4W | |
| C369 | 0.82u/250V | R490 | 910 | |
| C371 | 0.33u/400V | R675 | 1.2 2W | |
| C386 | 1800P/2KV | ZD404 | 24V | |
| D504 | OPEN | P402 | OPEN | |
| J101 | OPEN | C.COIL | OPEN | |
| J121 | OPEN | DEGAUSS | -0069 | |
| J170 | 7.5mm | | | |
| L305 | -0460 | | | |
| Q324 | IRF640 | | | |
| Q325 | IRF640 | | | |
| R208 | 180/1W | | | |
| R253 | 68K | | | |
| R256 | 510 | | | |
| R257 | 3.3K | | | |
| R356 | 1R/3W | | | |
| R377 | 6.5K | | | |
| R407 | 330K 1/4W | | | |
| R421 | OPEN | | | |
| R427 | 18K | | | |
| R428 | 5.6K | | | |
| R434 | 8.2K | | | |
| R450 | 7.5mm | | | |
| R453 | OPEN | | | |

| | |
|---|---|
| CHUNTEX ELECTRONIC CO., LTD. | |
| MODEL : 1785S (TOSHIBA) | PRT. NO : 11S31-055A |
| NAME : MAIN/B | FILE NAME : M55A2 |
| REV : A2 | DRAWN : H.H.WANG |
| DATE : 04/03/1996 | CHECK : |
| UPDATE: M.Y.LEE | UPDATE CHECK: M.S.LIN |

11S31-055A REV: A